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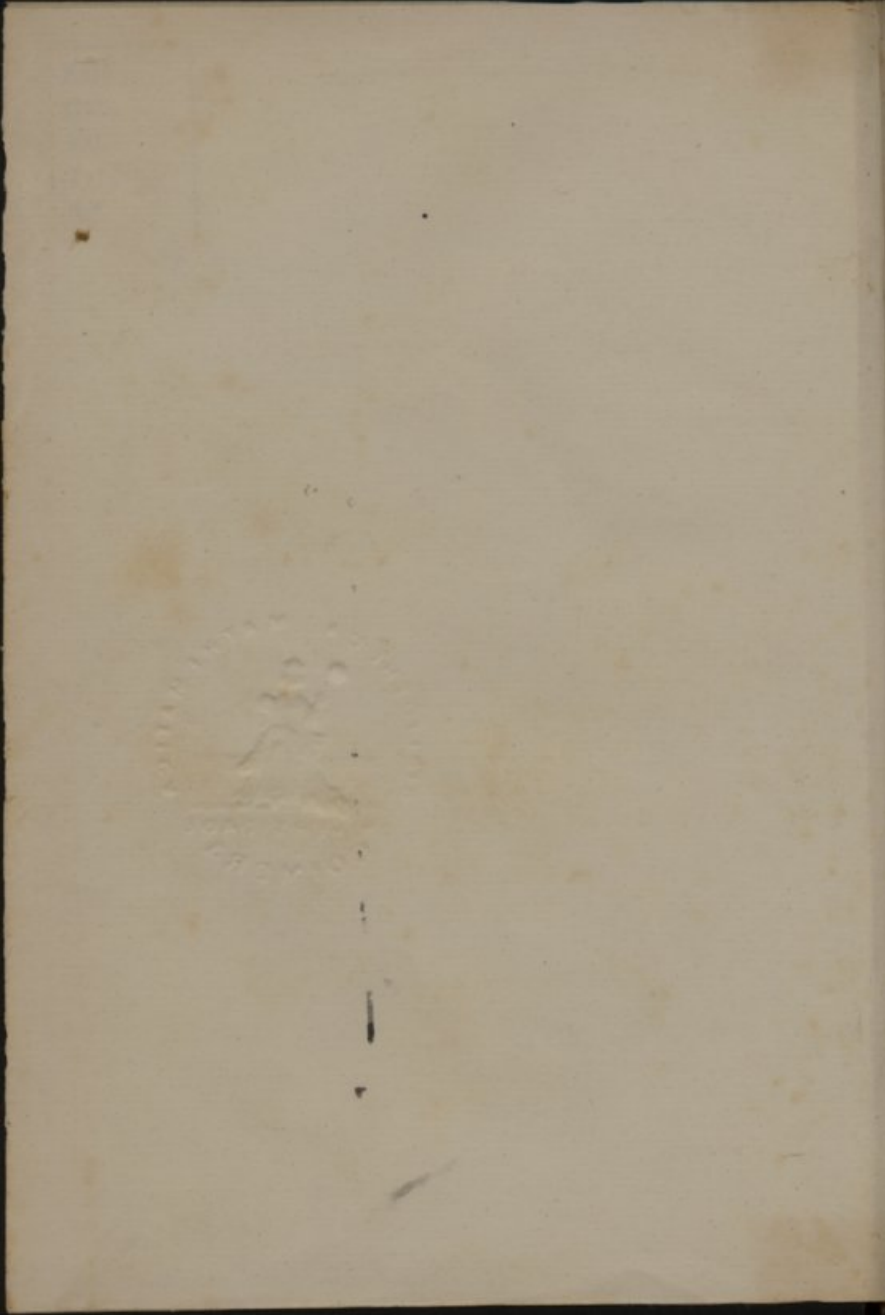


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20. OCT. 1870

TABLES  
DE LOGARITHMES

POUR  
LES NOMBRES ET POUR LES SINUS.



PAR  
L'IMPRIMERIE DE L'UNIVERSITÉ

1824

*A. L.*

TABLES  
DE LOGARITHMES

POUR  
LES NOMBRES ET POUR LES SINUS.

# TABLES DE LOGARITHMES

POUR

LES NOMBRES ET POUR LES SINUS,

Avec les explications, et les usages principaux pour  
l'Astronomie, la Gnomonique, la Géométrie, la  
Navigation, la Géographie, la Physique, l'Art  
Militaire, l'Architecture, l'Arpentage, la Statistique,  
et les Rentes.

PAR JÉRÔME DE LA LANDE, ancien Directeur  
de l'Observatoire.



A COIMBRE,

De l'Imprimerie de l'Université.

1820.



N.º de Reg. R. 294

TABLES  
DE LOGARITHMES

POUR

LES NOMBRES ET POUR LES SINUS,

Avec les tangentes, et les autres principaux pour  
l'Astronomie, la Géométrie, la Mécanique, la  
Navigation, la Chronologie, la Physique, l'Art  
Militaire, l'Architecture, l'Arpentage, la Statistique,  
et les autres.

Par M. DE LA LANDE, ancien Directeur  
de l'Observatoire.



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# EXPLICATION

## DES LOGARITHMES.

L'INVENTION des logarithmes, que Néper publia en 1614, consiste dans cette remarque fondamentale: si, à côté d'une progression géométrique 1, 10, 100, etc., on met une progression arithmétique 0, 1, 2, 3, etc., les termes de celle-ci représentent par leur addition ce que les autres font par leur multiplication; et on les appelle logarithmes, parce qu'ils indiquent la marche des nombres: ainsi, en ajoutant 1, qui est le logar. de 10, avec 3, qui est le logar. de 1000, on a 4, qui est celui de 10000.

Mais, pour que cette idée pût devenir aussi utile qu'elle l'est, il falloit intercaler entre 1 et 10, et entre 10 et 100, tous les nombres en progression géométrique, aux quels répondroient dans la seconde colonne autant de nombres en progression arithmétique: c'est ce qu'ont fait successivement Briggs et Vlacq dans les grandes tables dont nous nous servons encore, et qui ont donné à l'astronomie une impulsion rapide; en abrégéant prodigieusement les calculs: toutes ces tables ont été calculés à 11 chiffres. Nous n'en mettons que 6 dans ce volume, parceque cela suffit pour la plupart des calculs. Mais M. Vega, officier autrichien, les a fait réimprimer à Leipzig, en 1794, in-folio, dans toute leur étendue; et les Tables Stéréotypes, réimprimées par les soins du citoyen Firmin Didot et Callet, quoiqu'elles n'aient que huit chiffres, suffisent pour toutes les opérations délicates de l'astronomie et de la navigation.



Dans les logarithmes tabulaires, ou log. de Briggs, que nous employons, la base est 10, parcequ'on a pris 1 pour le logarithme de 10; mais, dans le premier système des logarithmes, qui sont les logar. naturels, log. de Neper, ou hyperboliques, la base est 2,718, et le logarithme hyperbolique de 10 est 2,30259. Ces logarithmes ont été les premières, parceque Neper ayant trouvé qu'entre 1 et 10 il falloit 230259 moyennes proportionnelles, il prit ce nombre pour le log. de 10. Voyez Montucla, Hist. des Mathém., nouv. éd., t. 2, p. 18, et Maseres, *Scriptores logarithmici*. 4. vol. in-4°.

Les logarithmes hyperboliques sont aux logarithmes tabulaires comme 2,3 à 1; ainsi il suffit de multiplier nos logar. par 2,3 pour avoir les logarithmes hyperboliques; on trouvera, par exemple, celui de 3 égal à 1,09861.

Les sinus dont on se sert dans toutes les opérations de triangles, pour le ciel, la terre, et la mer, doivent avoir aussi leurs logarithmes; mais les sinus étant toujours des fractions du rayon, les logarithmes des sinus sont des logarithmes de fractions, et leurs logarithmes sont négatifs; car en prolongeant la table précédente en haut, on trouveroit pour  $\frac{1}{10}$  le log.  $-1$ ,  $\left| \frac{1}{10} \right| - 1$  et ainsi des autres, comme dans la table  $\left| \frac{1}{100} \right| - 2$  ci-jointe. Au lieu de  $-1$ , on met  $+9$ , ce  $\left| \frac{1}{1000} \right| - 3$  qui revient au même, pourvu qu'on observe  $\left| \frac{1}{10000} \right| - 4$  à la fin de retrancher 10 qu'on a mis de trop; c'est ce qu'on verra dans les exemples suivans.

Le premier usage des logarithmes consiste à ebréger les multiplications et les divisions, surtout dans les règles de trois. Si, par exemple, j'ai cette proportion

$$984 : 876 :: 989 : x,$$

pour trouver le 4<sup>e</sup> terme il faudroit multiplier 876 par 989, et diviser le produit par 984; au lieu de deux longues opérations, j'ajoute les deux logarithmes des termes moyens, la somme est le logarithme du produit; j'en ôte le log. du premier terme 984; il me reste un logar. qui dans les tables répond à 880; c'est la quantité cherchée.

876 . .	294250
989 . .	299520
Somme	593770
984 . .	299300
880 . . .	294470

Voyant que le logarithme de 880 est un peu plus petit que le mien, je cherche 394470, et je trouve 880,4; ce qui m'apprend qu'il y a 4 dixièmes de plus que le nombre 880.

Le premier chiffre d'un logarithme s'appelle la Caractéristique, parcequ'il caractérise et indique les dixaines, les centaines, ou les mille; pour la première dixaine elle est toujours 0; jusqu'à 100 elle est toujours 1; jusqu'à 1000 c'est 2; jusqu'à 10 mille c'est 3; elle a toujours un de moins que le nombre des chiffres du nombre indiqué.

Quand il s'agit des fractions décimales, 9 indique des dixièmes, 8 des centièmes, 7 des millièmes. En général il faut mettre après le zéro des entiers et la virgule, ou le point qui les sépare, autant de zéros qu'il en faut à la caractéristique pour faire 9. Si j'avois le log. 7,91751, je chercherois vis-à-vis de 2,91751; je trouverois 827; mais j'écrirois 0,00827, parcequ'ayant 7 à la caractéristique, il faut deux zéros après celui des entiers.

On verra ci-après page 12 ce qu'il faut faire quand on veut avoir un chiffre de plus que ne donnent les tables.

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## USAGE DES LOGARITHMES

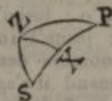
### *dans l'Astronomie.*

Le cas le plus fréquent est celui où l'on cherche la longitude d'une planète vue de la terre, quand on a la longitude héliocentrique par les tables astronomiques, celle du soleil, et les distances du soleil à la terre et de la planète au soleil; on a pour lors un triangle rectiligne dont on connoit deux côtés et l'angle compris. Pour trouver l'angle à la terre ou l'élongation, on ôte le logarithme de la petite distance de celui de la grande; on a le log. tang. d'un angle dont on ôte 45°. La tangente du reste ôté de la cotangente de la

demi-commutation, donne la cotangente de ce qu'il faut ajouter pour les planetes supérieures avec la demi-commutation ou son supplément; on a l'elongation: elle s'ajoute au lieu du soleil, dans le six premiers signes de la commutation, qui est toujours le lieu de la planete moins celui du soleil, et l'on a le lieu géocentrique. Voy, mon *ASTRONOMIE*, art. 1141.

*Trouver la hauteur du soleil ou d'une étoile, quand on connoît sa distance au méridien.*

Astr. art. 1036.



On imagine un triangle formé au pôle, au zénit et au soleil, en y mettant P, Z, et S; on conçoit une arc perpendiculaire ZX sur le côté PS, et l'on fait cette analogie.

$$R : \cos. P :: \tan. PZ : \tan. PX.$$

On prend la somme ou la différence de PX et de PS pour avoir SX, et l'on fait cette seconde analogie:

$$\cosin. PX : \cos. SX :: \cos. PZ : \cos. ZS.$$

C'est la distance du soleil au zénit, ou le complément de sa hauteur; et comme l'on a aussi besoin dans les éclipses de l'angle S, on dit:

$$\sin. SX : \sin. PX :: \tan. P : \tan. S,$$

qui est l'angle du vertical et du cercle de déclinaison.

*Trouver l'heure par le moyen de la hauteur du soleil.*

Quand on a observé la hauteur du soleil avec un quart-de-cercle ou un gnomon, on connoît les trois côtés du triangle PZS: on en prend la demi-somme, dont on ôte les deux côtés PZ et PS pour avoir deux différences; de la somme de leurs log. sinus on ôte celle des log. sinus des deux côtés PZ et PS: on prend la moitié de la différence, on cherche ce log. parmi ceux des sinus; l'on double l'angle trouvé, et l'on a l'angle P. On le convertit en tems à raison de 15° par heure.



Si c'est une étoile, on y ajoute l'asc. dr. de l'étoile, moins celle du soleil, et l'on a le tems vrai.

On évite ce calcul par le moyen des Tables horaires, que j'ai publiées dans mon ABRÉGÉ DE NAVIGATION, 1793, in-4°, pour tous les degrés de hauteur du pôle.

*Connoissant l'ascension droite et la déclinaison d'un astre, trouver sa longitude et sa latitude.*

On fait d'abord ces deux proportions:

R : cos. asc. d. :: cos. déclin. : cos. hypothénuse.

R : sin. asc. d. :: cot. déclin. : cot. angle.

On ajoute 23° 28' dans les six premiers signes pour les déclinaisons australes; dans les autres cas on prend la différence; on a l'angle qu'il faut employer dans les deux analogies suivantes.

R : cos. angle :: tang. hyp. : tang. long.

R : sin. hyp. :: sin. angle : sin. latitude.

*Trouver la précession annuelle en ascension droite et en déclinaison.*

Le log. constant 1,30086 ajouté avec le log. sinus de l'ascens. droite et le log. tang. de la déclinaison, donne celui du nombre qu'il faut ajouter à 45° 91 dans les six premiers signes pour les étoiles boréales.

Le même log., ajouté au log. cosinus de l'ascension dr. donne le log. de la précession en déclinaison, qui est croissante pour les étoiles boréales dans les signes ascendants 9, 10, 11, 0, 1 et 2. de longitude.

Ce log. constant suppose 50" 15 pour la précession annuelle dans ce siècle-ci. *Connoiss. des tems*, 1798, p. 224. ASTRONOMIE, art. 2721.

*Pour les cadrans solaires.*

Tracer un cadran horizontal pour une latitude donnée par exemple à Paris. ASTR. art. 4092.

Le style doit faire un angle égal à la hauteur du pôle. Je suppose qu'on demande l'angle de la ligne d'une

heure avec la méridienne ; on ajoutera le log. sin. de la latitude  $48^{\circ} 51'$  avec celui de la tang. de  $51^{\circ}$  qui répond à une heure ; on aura le log. tang. de  $11^{\circ} 24'$ , qui est l'angle cherché. On aura les autres, en prenant successivement  $30$ ,  $45$ ,  $60$ , et  $75$  degrés.

Pour orienter le cadran, au défaut d'une boussole, il suffit de voir avec une montre simple, si elle diffère également du cadran, à midi et à six heures, car alors on est sûr que le cadran est bien placé ; sinon l'on le tourne de la moitié de la différence que le cadran indique à six heures. Il faut qu'il soit bien horizontal ; mais il suffit de verser de l'eau dessus pour s'en assurer.

Pour les cadrans verticaux déclinaux, on peut voir mon ASTRONOMIE, art. 4091 ; la Gnomonique de Dom Bedos ou celle de Deparcieux, et pour les autres cadrans, ce que j'ai donné dans l'Encyclopédie Méthodique au mot CADRAN.

## USAGE DES LOGARITHMES

*pour la navigation et la géographie.*

UN NAVIGATEUR a trouvé par le Loch qu'on avoit parcouru 226 milles ou minutes, et par la boussole, qu'on étoit sur le rumb du N. E.  $\frac{1}{2}$  N, ou  $33^{\circ} 45'$ . Il s'agit de trouver combien on a avancé vers le nord. Pour cela on a un triangle rectangle dont l'hypoténuse est 226 ; on ajoute à son log. celui du cos. du rumb, et l'on a un logarithme qui répond à 188 milles, ou  $3^{\circ} 8'$  de grand cercle, dont on a avancé en latitude vers le nord.

Pour trouver le chemin qu'on a fait d'orient en occident ou vers l'orient ; on ajoute le sinus du rumb ; on trouve 126 minutes.

de la latitude $48^{\circ} 51'$	9,87679
avec celui de la tang. de $51^{\circ}$	9,42805
qui répond à une heure	<hr/>
on aura le log. tang. de $11^{\circ} 24'$	9,30484

226	2,35411
cos. $33^{\circ} 45'$	9,91985
<hr/>	
188	2,27396
226	2,35411
sin. $33^{\circ} 45'$	9,74474
<hr/>	
126	2,09885

Mais si l'on n'est pas sous l'équateur, il faut y réduire les milles est et ouest; je suppose que la latitude du moyen parallèle soit de  $49^{\circ}$ , comme à Paris, il faut ôter le log. cos. de  $49^{\circ}$  de la somme trouvée, et l'on a celui de  $191'$  ou  $3^{\circ} 11'$ ; c'est ce qu'on a fait en longitude, c'est-à-dire en degrés et minutes comptés sur l'équateur ou sur le parallèle de  $49^{\circ}$ .

$$\begin{array}{r} \cos. 49^{\circ} \quad 2,09885 \\ \quad \quad \quad 9,81694 \\ \hline \quad \quad \quad 2,28191 \end{array}$$

Voyez le traité de Navigation, par Bouguer, revu et abrégé par Lacaille, 3<sup>e</sup> édition, augmentée par moi, 1792, chez la veuve Desaint, in-8<sup>o</sup>; mon Abrégé de Navigation, et l'explication des réductions des petits cercles, ASTRONOMIE, art. 3877.

UN GÉOGRAPHE veut connoître le degré de longitude pour un parallèle donné, par exemple, à  $46^{\circ}$ ; il ne faut qu'ajouter le log. de 57012 toises, degré moyen de la terre, avec celui du cosinus de  $46^{\circ}$ , et il trouve celui de 39604 toises.

Cela suppose la terre sphérique. Pour tenir compte de l'aplatissement, voy. ASTRONOMIE, liv. XV; mais on a rarement besoin de cette précision.

Un voyageur veut savoir la latitude du lieu où il est; il plante un bâton, que je suppose de 3 pieds, et il en mesure l'ombre à midi; je la suppose de 2 pieds; le log. de 2 pieds, ôté de celui de 3 pieds, lui donne la tangente de  $56^{\circ} 19'$ ; c'est la hauteur du soleil. Sa déclinaison ajoutée à cette hauteur, ou retranchée, si elle est boréale, donne la hauteur de l'équateur, dont le complément est la latitude cherchée.

$$\begin{array}{r} 0,47712 \\ 0,30103 \\ \hline 0,17609 \end{array}$$

On trouvera page 23 la table des déclinaisons du soleil pour le cas où l'on n'auroit pas d'annuaire.

ON GÉOGRAPHE connoît la longitude et la latitude de deux villes, et il veut savoir leur distance; c'est un triangle dont on connoît deux côtés et l'angle compris, et dont il faut chercher le 3<sup>e</sup> côté; le problème est le même que pour trouver la distance du soleil au zénit, p. 8. L'angle P est la différence des longitudes; les côtés PZ et PS sont les distances des deux pays au pôle nord, ce sont les



complémens de leurs latitudes géographiques, si elles sont boréales.

Un géographe connoît la distance des pyramides de Villejuive et de Juvisy, 5717 toises, et ayant pris les angles sur Fontenai-aux-Roses, il a trouvé  $87^{\circ} 52'$  et  $61^{\circ} 28'$ , d'où il suit que le 3<sup>e</sup> angle est de  $30^{\circ} 40'$ . Il s'agit de résoudre un triangle dont on connoît les angles et un côté, en disant, le sin. de  $30^{\circ} 40'$  est 5717 t. como le sinus de  $87^{\circ} 52'$  est au côté opposé, qui se trouve de 11216 toises; c'est la distance de Villejuive à Fontaine. Mais comme le dernier logarithme ne se trouveroit pas dans notre table, on cherchera 3,0 au lieu de 4,0; puisque la différence d'un log. à l'autre est 39, on dira  $39 : 10 :: 4 : 1$ , est l'on saura qu'il faut mettre 1 par le cinquième chiffre.

	5717	3,75717
sin. $87^{\circ} 52'$		9,99970
		3,75687
ôt. sin. $30^{\circ} 40'$		9,70761
11201		4,04926
		22
		4

Mais les tables que nous publions ne sont destinées que pour les opérations de 4 chiffres; lorsqu'on en veut cinq, il faut recourir aux tables de cent mil.

C'est par l'opération dont nous venons de donner l'exemple, que l'on a déterminé la grandeur des degrés de la terre.

## USAGES DES LOGORITHMES

*dans la géométrie, l'arpentage, etc.*

On peut trouver la hauteur d'un clocher, d'un arbre, par la longueur de l'ombre à midi; pour cela on prend la déclinaison du soleil pour ce jour-là; on ôte de la latitude du lieu, si elle est boréale; on l'ajoute, si elle est australe; on ajoute le log. cotang. de la différence ou de la somme avec celui de l'ombre, et l'on a logarithme de la hauteur cherchée.

Un architecte veut connoître la hauteur d'une tour;



il s'en éloigne 120 pieds, et il mesure l'angle du sommet sur le plan horizontal au bas de la tour, de  $70^{\circ} 30'$ ; il ne faut qu'ajouter le logarithme de 120

120	2,07918
t. $70^{\circ} 30'$	0,45085
339	2,53003

avec celui de la tangente de  $70^{\circ} 30'$ , et l'on a pour somme le logarithme de 339 pieds.

Si l'instrument qui a servi à prendre l'angle est élevé de 4 pieds au-dessus du sol, il faut les ajouter à la hauteur trouvée.

Un ingénieur veut connoître le distance du rempart d'une ville assiégée; il a mesuré 153 toises le long du glacis, et il a mesuré un angle droit d'un côté, et un angle de  $82^{\circ} 35'$  de l'autre; il ne s'agit que de faire cette proportion: le cosinus de  $82^{\circ} 35'$  est à 153 t., comme le rayon est à la distance au point où l'on a trouvé l'angle de  $82^{\circ} 35'$ . Comme

153	2,18469
cosin. $82^{\circ} 35'$	9,11087
1185	3,07382

le logarithme du rayon est toujours zéro, il suffit d'ôter le log. cos. de  $82^{\circ} 35'$  de celui de 153 toises, en supposant 10 de plus, parceque le log. cos. a 10. de trop, et il reste un log. auquel répondent dans la table 1185 toises.

Un arpenteur a mesuré la surface d'une forêt de 285 toises carrées, sur le penchant d'une montagne inclinée de 30 degrés; il faut la rapporter à un plan horizontal, en la multipliant par le cosinus de l'inclinaison; pour cela il suffit d'ajouter le log. de 285 avec celui du cosinus de  $30^{\circ}$ , la somme repond

285	2,45484
cos. $30^{\circ}$	9,95755
247	2,59237

à 247 toises carrées, qui forment la surface cherchée.

Un ingénieur veut connoître le niveau vrai d'un canal sur une distance de 500 toises; il baisse de 3 pieds 8 pouces pour 2000 toises, mais il varie comme le carré des distances; on dira: le carré de 2000 est au carré de 500 comme 3 pieds 8 pouces, ou 528 lignes, sont au nombre cherché. Cela se réduit à ajouter le log. constant 6,12057 avec deux fois celui de la distance. On trouve celui de 33 lignes; c'est la quantité dont le véritable niveau est au-dessous du niveau apparent, à cette distance de 500 toises.

Je profite de l'occasion pour avertir les ingénieurs

qu'on peut faire un niveau à lunette qui se vérifie par une seule station : si l'on a une lunette à deux anneaux bien ronds, qui tourne dans deux colliers ; en lui faisant faire un demi-tour on est sûr que l'axe optique est dans le milieu des anneaux ; en changeant la lunette d'un collier à l'autre, avec le niveau qui y est attaché, on vérifie le parallélisme de la bulle avec la ligne des deux anneaux ; est s'il y a une différence, on la corrige par les vis de la lunette.

Un physicien muni d'un baromètre portatif, l'a observé sur une montagne à 26 pouces 2 lignes. On sait qu'au bord de la mer il est à 28 p. 2 lig. Il pendra la différence des logarithmes de 338 et 314 lignes ;

338 li. 2,52892	
314	2,49693
	diff. 319,9

il aura 3199 ; c'est la hauteur en dixièmes de toises, en supposant la chaleur de 17 degrés. Il faut en ôter  $\frac{1}{275}$  pour chaque degré dont le thermomètre seroit moins élevé.

Voici le changement de hauteur indiqué par chaque pouce du baromètre jusqu'à 2400 toises, qui est la plus grande élévation, où les hommes puissent respirer.

Pouces.	Toises.	Pouces.	Toises.
27	184	21	1275
26	348	20	1487
25	518	19	1710
24	695	18	1945
23	880	17	2193
22	1075	16	2456

*Trouver la surface d'un cercle dont on connoît le diamètre*

Supposons que le diamètre soit de 24

24 . . .	1,38021
	1,38021
	9,89509
452,4	2,65551

24 p. on ajoutera le double de son logar. avec le log. constant 9,89509, et l'on aura la surface 452 pouc. carrés, et en cherchant avec le caractèreistique 3, on aura 452,4 ou 4 dixièmes de plus.

*Trouver la surface d'un segment de cercle.* Je suppose un arc de  $64^\circ$  ou  $230400''$ , qui en décimales du rayon vaut 1,11701; on en ôte le sinus 0,89879; la moitié de la différence étant divisée par la surface du cercle 3,14159, donne 0,03473 par le segment entier, en parties de la surface du cercle entier.

*Trouver le sinus verse d'un petit arc.* On le réduit en secondes; le double du log. des secondes, ajouté avec le log. const. 9,0701197, donne le log. du sinus verse en parties du rayon.

On fait un grand usage des sinus verses dans la marine.

*Trouver la surface d'un segment de sphère.*

Ayant déterminé 50 mille étoiles dans l'espace du pôle au tropique d'hiver, j'ai voulu savoir combien j'en aurois trouvé dans tout le ciel. Pour cela il faut avoir la surface de la calotte sphérique depuis le pôle jusqu'à  $66^\circ 52'$ ; le log. sinus de  $25^\circ 28'$ , 9,60012 fait trouver dans les log des nombres 0,3982 par le sinus naturel; le sinus verse est donc 0,6018 par  $66^\circ 52'$ . Cette fraction décimale est aussi celle du segment sphérique, ou 0,3009 de la surface entière de la sphère; donc le grand segment est 0,6991; si l'on ôte son logar. de celui de 50000, on aura 4,85443, auquel répond 71520; c'est le nombre cherché.

#### *Jaugeage des tonneaux.*

Le logarithme de la surface du cercle, trouvée ci-dessus, pour une diametre de 24 pouces, étant ajouté avec celui de la longueur 24 du tonneau, donnera le volume du cylindre en pouces cubes; se l'on en ôte celui de 48 pouces, on aura le log. des pintes du cylindre 226 et 2 dixiemes.

452	2,65551
24	1,38021
<hr/>	
	4,03572
48	1,68124
<hr/>	
226,2	2,35448

Si l'on suppose la pinte 46,95, on trouvera 231,2.

Si l'on a mesuré la longueur intérieure du tonneau en pouces, et le diametre moyen entre celui du fond et celui du bondon, et qu'on ajoute le double de son logarithme et celui de la longueur avec le logarithme constant 8,21385, on aura celui du nombre de pintes de 48 pouces cubes que le tonneau contient.





## DES LOGARITHMES.

17

555000000 habitans , . . . . .	7	8,52244
1298000 milles , . . . . .		6,11327
256 habitans par mille , . . . . .		2,40917
Otez le 4 <sup>e</sup> log. , . . . . .		9,12178
Reste : . . . . .		3,28739
1938 par lieue carrée .		

Mais il est fort douteux que le nombre des habitans de la Chine soit aussi fort.

En France, il y a 916 habitans par lieue, suivant Necker, de l'administration des fin., 1785, t. 1, p. 152.

On demande le prix de la livre de pain en Angleterre, en poids et monnoie de France; le rapport des livres d'Angleterre et de France étant de 8533 à 9216, et la livre sterling étant de 24 francs et douze sous, monnoie de France; ainsi il y a 492 pences pour 492 sous. On trouve par l'opération ci-jointe, pour une penny la livre, 1,9; ou 19 sous les dix livres de France pour dix pences la livre d'Angleterre.

8533	3,93110
9216	3,96454
	9,96656
492	2,69197
	2,65853
240	2,38021
1,9	0,27832

J'ai donné le catalogue des principaux livres de statistique dans l'annuaire de l'an 8, ou 1800, et l'on en publie un journal à Paris.

## DES INTÉRÊTS COMPOSÉS.

SI au lieu de payer au bout de l'année les intérêts d'un capital, on les ajoute au principal, de sorte qu'on paye la seconde année les intérêts du capital primitif, augmentés des intérêts de la première année; et si l'on continue tous les ans de cette manière, on reçoit alors les intérêts des intérêts, ou des intérêts composés.

Si l'on reçoit 5 pour cent, un capital de 100 francs sera au bout de la première année 105 francs, ou  $100 \times \frac{105}{100}$ . Le nouveau capital de 105 sera au bout de la seconde année

$100 \times \left(\frac{105}{100}\right)^3$ ; car  $100 : 105 = 100 \times \left(\frac{100}{105}\right) : 100 \left(\frac{100}{105}\right)^2$  et il est clair que ce nouveau capital deviendra au bout de la troisième année  $100 \cdot \left(\frac{100}{105}\right)^3$  et au bout de la quatrième année  $100 \cdot \left(\frac{100}{105}\right)^4$ , etc.

Ainsi, pour avoir la valeur d'un capital que a été prêté à intérêts composés pendant un nombre d'années quelconque, voici la règle.

Ajoutez 100 à l'intérêt annuel: cherchez le logarithme de ce nombre; mettez o lieu de 2 pour le premier chiffre de ce logarithme; multipliez-le alors par le nombre d'années, et ajoutez-y le logarithme du capital primitif: la somme sera le logarithme de la valeur du capital.

## PREMIER EXEMPLE.

Pour 1000 francs à  $5\frac{1}{2}$  pour 100 pendant 20 ans

$$100 + 5\frac{1}{2} = 105\frac{1}{2} = 105,5$$

dont le logar. diminué de 2 est . . . . . 0,02325

En le multipliant par 20, on aura . . . . . 0,46500

Ajoutant o logarithme de 1000 . . . . . 3,00000

On aura . . . . . 3,46500

Ce que donne 2617 fr. 4 décimes.

## DEUXIEME EXEMPLE.

Combiem d'années faut-il prêter 1000 francs à  $5\frac{1}{2}$  pour cent, intérêts composés, pour rembourser 10000 francs?

Du logar. de 10000 . . . . . 4,00000

Otez logar. de 1000 . . . . . 3,00000

Le reste est . . . . . 1,00000

Divisant ce reste par le logarithme de 105,5 diminué de 2, ou par 0,02325, on aura 43 pour le quotient, ce qui est le nombre d'années cherché.

## TROISIEME EXEMPLE.

Quelle somme faut-il prêter pendant 20 ans, à  $5\frac{1}{2}$  pour cent, intérêts composés, pour rembourser 10000 francs?





Cherchez le logar. de la rente ; augmentez son premier chiffre de 2 , et ôtez le logarithme du taux de l'argent ( $5\frac{1}{2}$  ici) : et cherchez le nombre correspondant à ce reste.

Diminuez le premier chiffre du logar. de  $105\frac{1}{2}$  de 2 ; multipliez-le par nombre d'années pendant lesquelles on reçoit la rente (ici 20) ; ajoutez ce logarithme au reste trouvé ci-dessus , et cherchez le nombre correspondant à cette somme. Otez-en le nombre trouvé auparavant ; vous aurez le prix de la rente.

Logar. 10000 , augmenté de 2 . . . . .	6,00000	
Logar. de $5\frac{1}{2}$ ou de 5,5 . . . . .	0,74056	
Reste , . . . . .	5,25964	
Nombre correspondant ,	181818	
20 fois , log. 105, diminué de 2 . . . . .	0,46500	
Somme , . . . . .	5,72464	
Nombre correspondant ,	550448	
Différ. ou valeur de la rente ,	348630	francs.
Ce serait 350660 , pour l'intérêt à 5 pour c.		

## TABLE DE MORTALITÉ.

Age.	Ans.	Mois.	Age.	Ans.	Mois.
0	28	9	35	25	9
1	36	4	40	22	11
5	45	5	45	20	1
10	40	12	50	17	3
15	37	5	55	14	6
20	34	3	60	11	11
25	31	4	65	9	7
30	28	6	70	7	7



Mercure . . . . .	13,5681
Plomb . . . . .	11,3523
Argent . . . . .	10,4743
Cuivre jaune . . . . .	8,3958
Cuivre rouge . . . . .	7,7880
Acier . . . . .	7,8331
Fer forgé . . . . .	7,7880
Etain . . . . .	7,2914
Fer fondu . . . . .	7,2070
Porphyre . . . . .	2,7651
Granit d'Egypte . . . . .	2,7606
Marbre de Carrare . . . . .	2,7168
Pierre de S. Leu . . . . .	1,5781
Pierre d'Arcueil . . . . .	2,0605
Pierre de S. Cloud . . . . .	2,2011
Eau de mer . . . . .	1,0263
Eau distillée . . . . .	1,0000
Vin de Bourgogne . . . . .	0,9915
Huile d'olive . . . . .	0,9153
Bois de chêne . . . . .	1,1700
— — — sapin . . . . .	0,5500
Ethér vitriolique . . . . .	0,7396
Air commun . . . . .	0,00125233
Gaz oxigène, air pur . . . . .	0,00135929
Gaz hydrogène, air inflammable . . . . .	0,0009911

Le pied cube d'eau distillée pese 69 liv. 14 onces 1 gros et 54 grains, à 10° du thermometre, qui donne 80 de la glace à l'eau bouillante, suivant les expériences faites en 1799 pour les nouvelles mesures.

Pour trouver le poids d'un pied cube de marbre, ajoutez le log. de 2,7166 avec celui de 69,89 vous aurez celui de 189,88, c'est-à-dire 189 l. et 88 centièmes de livre, à la température de 10 degrés, qui la chaleur moyenne à Paris, et celle de l'intérieur de la terre.

L'eau qui pese 69 liv. 14 onces à 10°, pese 878 grains de moins à 20° de chaleur, pesée dans l'air; mais dans vide elle peseroit onze gros de moins.

0,43406
1,84442
<hr/>
2,27848

## DECLINAISONS DU SOLIEL

pour une année moyenne entre deux bissextiles; comme  
1802, 1806, 1810, etc.

1 5 10 15 20 25	Janvier. 23° 4' A 22 41 22 2 21 13 20 13 19 4	Février. 17 13 A 16 3 14 29 12 49 11 4 9 15	Mars. 7 45 A 6 13 4 17 2 18 0 20 1 58 B	Avril. 4 22 B 5 54 7 47 9 36 11 21 15 1	Mai. 14 56 B 16 7 17 50 18 46 19 55 20 55	Juin. 22 0 B 22 31 23 0 23 19 23 28 25 26
1 5 10 15 20 25	Juillet. 25 11 B 22 52 22 20 21 39 20 48 19 48	Août. 18 11 B 17 9 15 45 14 15 12 59 10 57	Septemb. 8 29 B 7 1 5 9 3 14 1 18 0 59 A	Octobre. 5 0 A 4 53 6 28 8 21 10 11 11 57	Novemb. 14 18 A 15 54 17 3 18 24 19 57 20 42	Décemb. 21 46 A 21 21 22 54 23 17 25 27 25 26

La lettre A indique une déclinaison australe, et B une déclinaison boréale.

# DECLINAISON DE SOFIEL

1802, 1803, 1804, etc.

Mois	Janv.	Févr.	Mars	Avril	Mai	Juin	Juillet
1802	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1803	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1804	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1805	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1806	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1807	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1808	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1809	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1810	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1811	10 48	10 50	10 52	10 54	10 56	10 58	10 60
1812	10 48	10 50	10 52	10 54	10 56	10 58	10 60

Les heures sont prises à midi et les déclinaisons sont prises à midi également.



# T A B L E

DES

LOGARITHMES DES NOMBRES,

depuis 1 jusqu'à 10000.

T A B L E

DES

LOGARITHMES DES NOMBRES,

départ 1 jusqu'à 10000



Nomb.	o. o' o"	Nomb.	o. o' 30"	Nomb.	o. 1' o"
	Logarit.		Logarit.		Logarit.
0	inf. nég.	30	1.47712	60	1.77815
1	0.00000	31	1.49136	61	1.78533
2	0.30103	32	1.50515	62	1.79239
5	0.47712	33	1.51851	63	1.79934
4	0.60206	34	1.53148	64	1.80618
5	0.69897	35	1.54407	65	1.81291
6	0.77815	36	1.55630	66	1.81954
7	0.84510	37	1.56820	67	1.82607
8	0.90309	38	1.57978	68	1.83251
9	0.95424	39	1.59106	69	1.83885
10	1.00000	40	1.60206	70	1.84510
11	1.04139	41	1.61278	71	1.85126
12	1.07918	42	1.62326	72	1.85733
13	1.11394	43	1.63347	73	1.86332
14	1.14613	44	1.64345	74	1.86923
15	1.17609	45	1.65321	75	1.87506
16	1.20412	46	1.66276	76	1.88081
17	1.23045	47	1.67210	77	1.88649
18	1.25527	48	1.68124	78	1.89209
19	1.27870	49	1.69020	79	1.89763
20	1.30103	50	1.69897	80	1.90309
21	1.32222	51	1.70757	81	1.90849
22	1.34242	52	1.71600	82	1.91381
23	1.36173	53	1.72428	83	1.91908
24	1.38021	54	1.73239	84	1.92428
25	1.39794	55	1.74036	85	1.92942
26	1.41497	56	1.74819	86	1.93450
27	1.43136	57	1.75587	87	1.93952
28	1.44716	58	1.76343	88	1.94448
29	1.46240	59	1.77085	89	1.94939
30	1.47712	60	1.77815	90	1.95424

Nomb.	o. 1' 30"	Nomb.	o. 2' 0"	Nomb.	o. 2' 30"
	Logarit.		Logarit.		Logarit.
90	1.95424	120	2.07918	150	2.17609
91	1.95904	121	2.08279	151	2.17898
92	1.96379	122	2.08656	152	2.18184
93	1.96848	123	2.08991	153	2.18469
94	1.97313	124	2.09342	154	2.18752
95	1.97772	125	2.09691	155	2.19033
96	1.98227	126	2.10037	156	2.19312
97	1.98677	127	2.10380	157	2.19590
98	1.99123	128	2.10721	158	2.19866
99	1.99564	129	2.11059	159	2.20140
100	2.00000	130	2.11394	160	2.20412
101	2.00432	131	2.11727	161	2.20683
102	2.00860	132	2.12057	162	2.20952
103	2.01284	133	2.12385	163	2.21219
104	2.01703	134	2.12710	164	2.21484
105	2.02119	135	2.13033	165	2.21748
106	2.02531	136	2.13354	166	2.22011
107	2.02938	137	2.13672	167	2.22272
108	2.03342	138	2.13988	168	2.22531
109	2.03743	139	2.14301	169	2.22789
110	2.04139	140	2.14613	170	2.23045
111	2.04532	141	2.14922	171	2.23300
112	2.04922	142	2.15229	172	2.23553
113	2.05308	143	2.15534	173	2.23805
114	2.05690	144	2.15836	174	2.24055
115	2.06070	145	2.16137	175	2.24304
116	2.06446	146	2.16435	176	2.24551
117	2.06819	147	2.16732	177	2.24797
118	2.07188	148	2.17026	178	2.25042
119	2.07555	149	2.17319	179	2.25285
120	2.07918	150	2.17609	180	2.25527

Nomb.	o. 3' 0"	Nomb.	o. 3' 30"	Nomb.	o. 4' 0"
	Logarit.		Logarit.		Logarit.
180	2.25527	210	2.52222	240	2.38021
181	2.25768	211	2.52428	241	2.38202
182	2.26007	212	2.52654	242	2.38382
183	2.26246	213	2.52838	243	2.38561
184	2.26482	214	2.53041	244	2.38739
185	2.26717	215	2.53244	245	2.38917
186	2.26951	216	2.53445	246	2.39094
187	2.27184	217	2.53646	247	2.39270
188	2.27416	218	2.53846	248	2.39445
189	2.27646	219	2.54044	249	2.39620
190	2.27875	220	2.54242	250	2.39794
191	2.28103	221	2.54439	251	2.39967
192	2.28330	222	2.54635	252	2.40140
193	2.28556	223	2.54830	253	2.40312
194	2.28780	224	2.55025	254	2.40483
195	2.29003	225	2.55218	255	2.40654
196	2.29226	226	2.55411	256	2.40824
197	2.29447	227	2.55603	257	2.40993
198	2.29667	228	2.55793	258	2.41162
199	2.29885	229	2.55984	259	2.41330
200	2.30103	230	2.56173	260	2.41497
201	2.30320	231	2.56361	261	2.41664
202	2.30535	232	2.56549	262	2.41830
203	2.30750	233	2.56736	263	2.41996
204	2.30963	234	2.56922	264	2.42160
205	2.31175	235	2.57107	265	2.42325
206	2.31387	236	2.57291	266	2.42488
207	2.31597	237	2.57475	267	2.42651
208	2.31806	238	2.57658	268	2.42813
209	2.32015	239	2.57840	269	2.42975
210	2.32222	240	2.58021	270	2.43136



o. 4' 30"		o. 5' 0"		o. 5' 30"	
Nomb.	Logarit.	Nomb.	Logarit.	Nomb.	Logarit.
270	2.43156	300	2.47712	330	2.51851
271	2.43297	301	2.47857	331	2.51983
272	2.43457	302	2.48001	332	2.52114
273	2.43616	303	2.48144	333	2.52244
274	2.43775	304	2.48287	334	2.52376
275	2.43933	305	2.48430	335	2.52504
276	2.44091	306	2.48572	336	2.52634
277	2.44248	307	2.48714	337	2.52763
278	2.44404	308	2.48855	338	2.52892
279	2.44560	309	2.48996	339	2.53020
280	2.44716	310	2.49136	340	2.53148
281	2.44871	311	2.49276	341	2.53275
282	2.45025	312	2.49415	342	2.53403
283	2.45179	313	2.49554	343	2.53529
284	2.45332	314	2.49693	344	2.53656
285	2.45484	315	2.49831	345	2.53782
286	2.45637	316	2.49969	346	2.53908
287	2.45788	317	2.50106	347	2.54033
288	2.45939	318	2.50243	348	2.54158
289	2.46090	319	2.50379	349	2.54283
290	2.46240	320	2.50515	350	2.54407
291	2.46389	321	2.50651	351	2.54531
292	2.46538	322	2.50786	352	2.54654
293	2.46687	323	2.50920	353	2.54777
294	2.46835	324	2.51055	354	2.54900
295	2.46982	325	2.51188	355	2.55023
296	2.47129	326	2.51322	356	2.55146
297	2.47276	327	2.51455	357	2.55267
298	2.47422	328	2.51587	358	2.55388
299	2.47567	329	2.51720	359	2.55509
300	2.47712	330	2.51851	360	2.55630



Nomb.	0. 6' 0"	Nomb.	0. 6' 30"	Nomb.	0. 7' 0"
	Logarit.		Logarit.		Logarit.
360	2.55630	390	2.59106	420	2.62325
361	2.55751	391	2.59218	421	2.62428
362	2.55871	392	2.59329	422	2.62531
363	2.55991	393	2.59439	423	2.62634
364	2.56110	394	2.59550	424	2.62737
365	2.56229	395	2.59660	425	2.62839
366	2.56348	396	2.59770	426	2.62941
367	2.56467	397	2.59879	427	2.63043
368	2.56585	398	2.59988	428	2.63144
369	2.56703	399	2.60097	429	2.63246
370	2.56820	400	2.60206	430	2.63347
371	2.56937	401	2.60314	431	2.63448
372	2.57054	402	2.60423	432	2.63548
373	2.57171	403	2.60531	433	2.63649
374	2.57287	404	2.60638	434	2.63749
375	2.57403	405	2.60746	435	2.63849
376	2.57519	406	2.60853	436	2.63949
377	2.57634	407	2.60959	437	2.64048
378	2.57749	408	2.61066	438	2.64147
379	2.57864	409	2.61172	439	2.64246
380	2.57978	410	2.61278	440	2.64345
381	2.58092	411	2.61384	441	2.64444
382	2.58206	412	2.61490	442	2.64542
383	2.58320	413	2.61595	443	2.64640
384	2.58433	414	2.61700	444	2.64738
385	2.58546	415	2.61805	445	2.64836
386	2.58659	416	2.61909	446	2.64933
387	2.58771	417	2.62014	447	2.65031
388	2.58883	418	2.62118	448	2.65128
389	2.58995	419	2.62221	449	2.65225
390	2.59106	420	2.62325	450	2.65321

o. 7' 30"		o. 8' 0"		o. 8' 30"	
Nomb.	Logarit.	Nomb.	Logarit.	Nomb.	Logarit.
450	2.65521	480	2.68124	510	2.70757
451	2.655418	481	2.68215	511	2.70842
452	2.65514	482	2.68305	512	2.70927
453	2.65610	483	2.68395	513	2.71012
454	2.65706	484	2.68485	514	2.71096
455	2.65801	485	2.68574	515	2.71181
456	2.65896	486	2.68664	516	2.71265
457	2.65992	487	2.68755	517	2.71349
558	2.66087	488	2.68842	518	2.71435
459	2.66181	489	2.68931	519	2.71517
460	2.66276	490	2.69020	520	2.71600
461	2.66370	491	2.69108	521	2.71684
462	2.66464	492	2.69197	522	2.71767
463	2.66558	493	2.69285	523	2.71850
464	2.66652	494	2.69373	524	2.71933
465	2.66746	495	2.69461	525	2.72016
466	2.66839	496	2.69548	526	2.72099
467	2.66932	497	2.69636	527	2.72181
468	2.67025	498	2.69723	528	2.72263
469	2.67117	499	2.69810	529	2.72346
470	2.67210	500	2.69897	530	2.72428
471	2.67302	501	2.69984	531	2.72509
472	2.67394	502	2.70070	532	2.72591
473	2.67486	503	2.70157	533	2.72673
474	2.67578	504	2.70243	534	2.72754
475	2.67669	505	2.70329	535	2.72835
476	2.67761	506	2.70415	536	2.72916
477	2.67852	507	2.70501	537	2.72997
478	2.67943	508	2.70586	538	2.73078
479	2.68034	509	2.70672	539	2.73159
480	2.68124	510	2.70757	540	2.73239

Nomb.	0. 9' 0"	Nomb.	0. 9' 30"	Nomb.	0. 10' 0"
	Logarit.		Logarit.		Logarit.
540	2.73259	570	2.75587	600	2.77815
541	2.73320	571	2.75664	601	2.77887
542	2.73400	572	2.75740	602	2.77960
543	2.73480	573	2.75815	603	2.78032
544	2.73560	574	2.75891	604	2.78104
545	2.73640	575	2.75967	605	2.78176
546	2.73719	576	2.76042	606	2.78247
547	2.73799	577	2.76118	607	2.78319
548	2.73878	578	2.76193	608	2.78390
549	2.73957	579	2.76268	609	2.78462
550	2.74036	580	2.76343	610	2.78533
551	2.74115	581	2.76418	611	2.78604
552	2.74194	582	2.76492	612	2.78675
553	2.74273	583	2.76567	613	2.78746
554	2.77351	584	2.76641	614	2.78817
555	2.74429	585	2.76716	615	2.78888
556	2.74507	586	2.76790	616	2.78958
557	2.74586	587	2.76864	617	2.79029
558	2.74663	588	2.76938	618	2.79099
559	2.74741	589	2.77012	619	2.79169
560	2.74819	590	2.77085	620	2.79239
561	2.74896	591	2.77159	621	2.79309
562	2.74974	592	2.77232	622	2.79379
563	2.75051	593	2.77305	623	2.79449
564	2.75128	594	2.77379	624	2.79518
565	2.75205	595	2.77452	625	2.79588
566	2.75282	596	2.77525	626	2.79657
567	2.75358	597	2.77597	627	2.79727
568	2.75435	598	2.77670	628	2.79796
569	2.75511	599	2.77743	629	2.79865
570	2.75587	600	2.77815	630	2.79934



Nomb.	0.10'30"	Nomb.	0.11'0"	Nomb.	0.11'30"
	Logarit.		Logarit.		Logarit.
630	2.79934	660	2.81954	690	2.85885
631	2.80003	661	2.82020	691	2.85948
632	2.80072	662	2.82086	692	2.84011
633	2.80140	663	2.82151	693	2.84073
634	2.80209	664	2.82217	694	2.84136
635	2.80277	665	2.82282	695	2.84198
636	2.80346	666	2.82347	696	2.84261
637	2.80414	667	2.82413	697	2.84323
638	2.80482	668	2.82478	698	2.84386
639	2.80550	669	2.82543	699	2.84448
640	2.80618	670	2.82607	700	2.84510
641	2.80686	671	2.82672	701	2.84572
642	2.80754	672	2.82737	702	2.84634
643	2.80821	673	2.82802	703	2.84696
644	2.80889	674	2.82866	704	2.84757
645	2.80956	675	2.82930	705	2.84819
646	2.81023	676	2.82995	706	2.84880
647	2.81090	677	2.83059	707	2.84942
648	2.81158	678	2.83123	708	2.85003
649	2.81224	679	2.83187	709	2.85065
650	2.81291	680	2.83251	710	2.85126
651	2.81358	681	2.83315	711	2.85187
652	2.81425	682	2.83378	712	2.85248
653	2.81491	683	2.83442	713	2.85309
654	2.81558	684	2.83506	714	2.85370
655	2.81624	685	2.83569	715	2.85431
656	2.81690	686	2.83632	716	2.85491
657	2.81757	687	2.83696	717	2.85552
658	2.81823	688	2.83759	718	2.85612
659	2.81889	689	2.83822	719	2.85673
660	2.81954	690	2.83885	720	2.85733



o. 12' 0"		o. 12' 30"		o. 13' 0"	
Nomb.	Logarit.	Nomb.	Logarit.	Nomb.	Logarit.
720	2.85735	750	2.87506	780	2.89209
721	2.85794	751	2.87564	781	2.89265
722	2.85854	752	2.87622	782	2.89321
723	2.85914	753	2.87679	783	2.89376
724	2.85974	754	2.87737	784	2.89432
725	2.86034	755	2.87795	785	2.89487
726	2.86094	756	2.87852	786	2.89542
727	2.86153	757	2.87910	787	2.89597
728	2.86213	758	2.87967	788	2.89653
729	2.86273	759	2.88024	789	2.89708
730	2.86332	760	2.88081	790	2.89763
731	2.86392	761	2.88138	791	2.89818
732	2.86451	762	2.88195	792	2.89873
733	2.86510	763	2.88252	793	2.89927
734	2.86570	764	2.88309	794	2.89982
735	2.86629	765	2.88366	795	2.90037
736	2.86688	766	2.88423	796	2.90091
737	2.86747	767	2.88480	797	2.90146
738	2.86806	768	2.88536	798	2.90200
739	2.86864	769	2.88593	799	2.90255
740	2.86923	770	2.88649	800	2.90309
741	2.86982	771	2.88705	801	2.90363
742	2.87040	772	2.88762	802	2.90417
743	2.87099	773	2.88818	803	2.90472
744	2.87157	774	2.88874	804	2.90526
745	2.87216	775	2.88930	805	2.90580
746	2.87274	776	2.88986	806	2.90634
747	2.87332	777	2.89042	807	2.90687
748	2.87390	778	2.89098	808	2.90741
749	2.87448	779	2.89154	809	2.90795
750	2.87506	780	2.89209	810	2.90849

Nomb.	o. 15'30"	Nomb.	o. 14'0"	Nomb.	o. 14'30"
	Logarit.		Logarit.		Logarit.
810	2.90849	840	2.92428	870	2.93952
811	2.90902	841	2.92480	871	2.94002
812	2.90956	842	2.92531	872	2.94052
813	2.91009	843	2.92583	873	2.94101
814	2.91062	844	2.92634	874	2.94151
815	2.91116	845	2.92686	875	2.94201
816	2.91169	846	2.92737	876	2.94250
817	2.91222	847	2.92788	877	2.94300
818	2.91275	848	2.92840	878	2.94349
819	2.91328	849	2.92891	879	2.94399
820	2.91381	850	2.92942	880	2.94449
821	2.91434	851	2.92993	881	2.94498
822	2.91487	852	2.93044	882	2.94547
823	2.91540	853	2.93095	883	2.94596
824	2.91593	854	2.93146	884	2.94645
825	2.91645	855	2.93197	885	2.94694
826	2.91698	856	2.93247	886	2.94743
827	2.91751	857	2.93298	887	2.94792
828	2.91803	858	2.93349	888	2.94841
829	2.91855	859	2.93399	889	2.94890
830	2.91908	860	2.93450	890	2.94939
831	2.91960	861	2.93500	891	2.94988
832	2.92012	862	2.93551	892	2.95036
833	2.92065	863	2.93601	893	2.95085
834	2.92117	864	2.93651	894	2.95134
835	2.92169	865	2.93702	895	2.95182
836	2.92221	866	2.93752	896	2.95231
837	2.92273	867	2.93802	897	2.95279
838	2.92324	868	2.93852	898	2.95328
839	2.92376	869	2.93902	899	2.95376
840	2.92428	870	2.93952	900	2.65424

o. 15' 0"		o. 15' 30"		o. 16' 0"	
Nomb.	Logarit.	Nomb.	Logarit.	Nomb.	Logarit.
900	2.95424	930	2.96848	960	2.98227
901	2.95472	931	2.96895	961	2.98272
902	2.95521	932	2.96942	962	2.98318
903	2.95569	933	2.96988	963	2.98363
904	2.95617	934	2.97035	964	2.98408
905	2.95665	935	2.97081	965	2.98453
906	2.95713	936	2.97128	966	2.98498
907	2.95761	937	2.97174	967	2.98543
908	2.95809	938	2.97220	968	2.98588
909	2.95856	939	2.97267	969	2.98632
910	2.95904	940	2.97313	970	2.98677
911	2.95952	941	2.97359	971	2.98722
912	2.95999	942	2.97405	972	2.98767
913	2.96047	943	2.97451	973	2.98811
914	2.96095	944	2.97497	974	2.98856
915	2.96142	945	2.97543	975	2.98900
916	2.96190	946	2.97589	976	2.98945
917	2.96237	947	2.97635	977	2.98989
918	2.96284	948	2.97681	978	2.99034
919	2.96332	949	2.97727	979	2.99078
920	2.96379	950	2.97772	980	2.99123
921	2.96426	951	2.97818	981	2.99167
922	2.96473	952	2.97864	982	2.99211
923	2.96520	953	2.97909	983	2.99255
924	2.96567	954	2.97955	984	2.99300
925	2.96614	955	2.98000	985	2.99344
926	2.96661	956	2.98046	986	2.99388
927	2.96708	957	2.98091	987	2.99432
928	2.96755	958	2.98137	988	2.99476
929	2.96802	959	2.98182	989	2.99520
930	2.96848	960	2.98227	990	2.99564



o. 16'30"			o. 17' 0"			o. 17'30"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
990	3.99564	43	1020	3.00860	43	1050	3.02119	41
991	3.99597	44	1021	3.00903	42	1051	3.02160	42
992	3.99551	44	1022	3.00945	43	1052	3.02202	41
993	3.99595	44	1023	3.00988	42	1053	3.02243	41
994	3.99759	43	1024	3.01050	42	1054	3.02284	41
995	3.99782	44	1025	3.01072	43	1055	3.02325	41
996	3.99826	44	1026	3.01115	42	1056	3.02366	41
997	3.99870	43	1027	3.01157	42	1057	3.02407	42
998	3.99913	44	1028	3.01199	43	1058	3.02449	41
999	3.99957	43	1029	3.01242	42	1059	3.02490	41
1000	3.00000	43	1030	3.01284	42	1060	3.02531	41
1001	3.00043	44	1031	3.01326	42	1061	3.02572	40
1002	3.00087	43	1032	3.01368	42	1062	3.02612	41
1003	3.00130	43	1033	3.01410	42	1063	3.02653	41
1004	3.00173	44	1034	3.01452	42	1064	3.02694	41
1005	3.00217	43	1035	3.01494	42	1065	3.02735	41
1006	3.00260	43	1036	3.01536	42	1066	3.02776	40
1007	3.00303	43	1037	3.01578	42	1067	3.02816	41
1008	3.00346	43	1038	3.01620	42	1068	3.02857	41
1009	3.00389	43	1039	3.01662	41	1069	3.02898	40
1010	3.00432	43	1040	3.01703	42	1070	3.02938	41
1011	3.00475	43	1041	3.01745	42	1071	3.02979	40
1012	3.00518	43	1042	3.01787	41	1072	3.03019	41
1013	3.00561	43	1043	3.01828	42	1073	3.03060	40
1014	3.00604	43	1044	3.01870	42	1074	3.03100	41
1015	3.00647	42	1045	3.01912	41	1075	3.03141	40
1016	3.00689	43	1046	3.01953	42	1076	3.03181	41
1017	3.00732	43	1047	3.01995	41	1077	3.03222	40
1018	3.00775	42	1048	3.02036	42	1078	3.03262	40
1019	3.00817	43	1049	3.02078	41	1079	3.03302	40
1020	3.00860		1050	3.02119		1080	3.03342	



Nomb.	o. 18' 0"	D.	Nomb	o. 18' 30"	D.	Nomb	o. 19' 0"	D.
	Logarit.			Logarit.			Logarit.	
1080	3.05342	41	1110	3.04532	39	1140	3.05690	39
1081	3.05383	40	1111	3.04571	39	1141	3.05729	38
1082	3.05423	40	1112	3.04610	40	1142	3.05767	38
1083	3.05463	40	1113	3.04650	39	1143	3.05805	38
1084	3.05503	40	1114	3.04689	38	1144	3.05843	38
1085	3.05543	40	1115	3.04727	39	1145	3.05881	37
1086	3.05583	40	1116	3.04766	39	1146	3.05918	38
1087	3.05623	40	1117	3.04805	39	1147	3.05956	38
1088	3.05663	40	1118	3.04844	39	1148	3.05994	38
1089	3.05703	40	1119	3.04883	39	1149	3.06032	38
1090	3.05743	39	1120	3.04922	39	1150	3.06070	38
1091	3.05782	40	1121	3.04961	38	1151	3.06108	37
1092	3.05822	40	1122	3.04999	39	1152	3.06145	38
1093	3.05862	40	1123	3.05038	39	1153	3.06183	38
1094	3.05902	39	1124	3.05077	38	1154	3.06221	37
1095	3.05941	40	1125	3.05115	39	1155	3.06258	38
1096	3.05981	40	1126	3.05154	38	1156	3.06296	37
1097	3.06021	39	1127	3.05192	39	1157	3.06333	38
1098	3.06060	40	1128	3.05231	38	1158	3.06371	37
1099	3.06100	39	1129	3.05269	39	1159	3.06408	38
1100	3.06139	40	1130	3.05308	38	1160	3.06446	37
1101	3.06179	39	1131	3.05346	39	1161	3.06483	38
1102	3.06218	40	1132	3.05385	38	1162	3.06521	37
1103	3.06258	39	1133	3.05423	38	1163	3.06558	37
1104	3.06297	39	1134	3.05461	39	1164	3.06595	38
1105	3.06336	40	1135	3.05500	38	1165	3.06633	37
1106	3.06376	39	1136	3.05538	38	1166	3.06670	37
1107	3.06415	39	1137	3.05576	38	1167	3.06707	37
1108	3.06454	39	1138	3.05614	38	1168	3.06744	37
1109	3.06493	39	1139	3.05652	38	1169	3.06781	37
1110	3.06532		1140	3.05690		1170	3.06819	38

Nomb.	0.19'30"	D.	Nomb.	0.20'0"	D.	Nomb.	0.20'30"	D.
	Logarit.			Logarit.			Logarit.	
1170	3.06819	37	1200	3.07918	36	1230	3.08991	35
1171	3.06856	37	1201	3.07954	36	1231	3.09026	35
1172	3.06893	37	1202	3.07990	37	1232	3.09061	35
1173	3.06930	37	1203	3.08027	36	1233	3.09096	36
1174	3.06967	37	1204	3.08063	36	1234	3.09132	36
1175	3.07004	37	1205	3.08099	36	1235	3.09167	35
1176	3.07041	37	1206	3.08135	36	1236	3.09202	35
1177	3.07078	37	1207	3.08171	36	1237	3.09237	35
1178	3.07115	36	1208	3.08207	36	1238	3.09272	35
1179	3.07151	37	1209	3.08243	36	1239	3.09307	35
1180	3.07188	37	1210	3.08279	35	1240	3.09342	35
1181	3.07225	37	1211	3.08314	36	1241	3.09377	35
1182	3.07262	36	1212	3.08350	36	1242	3.09412	35
1183	3.07298	37	1213	3.08386	36	1243	3.09447	35
1184	3.07335	37	1214	3.08422	36	1244	3.09482	35
1185	3.07372	36	1215	3.08458	35	1245	3.09517	35
1186	3.07408	37	1216	3.08495	36	1246	3.09552	35
1187	3.07445	37	1217	3.08529	36	1247	3.09587	34
1188	3.07482	36	1218	3.08565	35	1248	3.09621	35
1189	3.07518	37	1219	3.08600	36	1249	3.09656	35
1190	3.07555	36	1220	3.08636	36	1250	3.09691	35
1191	3.07591	37	1221	3.08672	35	1251	3.09726	34
1192	3.07628	36	1222	3.08707	36	1252	3.09760	35
1193	3.07664	36	1223	3.08743	35	1253	3.09795	35
1194	3.07700	37	1224	3.08778	36	1254	3.09830	34
1195	3.07737	36	1225	3.08814	35	1255	3.09864	36
1196	3.07773	36	1226	3.08849	35	1256	3.09899	35
1197	3.07809	37	1227	3.08884	36	1257	3.09934	34
1198	3.07846	36	1228	3.08920	35	1258	3.09968	35
1199	3.07882	36	1229	3.08955	36	1259	3.10003	34
1200	3.07918	36	1230	3.08991	36	1260	3.10037	34

Nomb.	0.21'0"	D.	Nomb.	0.21'30"	D.	Nomb.	0.22'0"	D.
	Logarit.			Logarit.			Logarit.	
1260	3.10037	35	1290	3.11059	34	1320	3.12057	33
1261	3.10072	34	1291	3.11093	33	1321	3.12090	33
1262	3.10106	34	1292	3.11126	34	1322	3.12123	33
1263	3.10140	35	1293	3.11160	33	1323	3.12156	33
1264	3.10175	34	1294	3.11193	34	1324	3.12189	33
1265	3.10209	34	1295	3.11227	34	1325	3.12222	32
1266	3.10243	35	1296	3.11261	33	1326	3.12254	33
1267	3.10278	34	1297	3.11294	33	1327	3.12287	33
1268	3.10312	34	1298	3.11327	34	1328	3.12320	32
1269	3.10346	34	1299	3.11361	33	1329	3.12352	33
1270	3.10380	35	1300	3.11394	34	1330	3.12385	33
1271	3.10415	34	1301	3.11428	33	1331	3.12418	32
1272	3.10449	34	1302	3.11461	33	1332	3.12450	33
1273	3.10483	34	1303	3.11494	34	1333	3.12483	33
1274	3.10517	34	1304	3.11528	33	1334	3.12516	32
1275	3.10551	34	1305	3.11561	33	1335	3.12548	33
1276	3.10585	34	1306	3.11594	34	1336	3.12581	32
1277	3.10619	34	1307	3.11628	33	1337	3.12613	33
1278	3.10653	34	1308	3.11661	33	1338	3.12646	32
1279	3.10687	34	1309	3.11694	33	1339	3.12678	32
1280	3.10721	34	1310	3.11727	33	1340	3.12710	33
1281	3.10755	34	1311	3.11760	33	1341	3.12743	32
1282	3.10789	34	1312	3.11793	33	1342	3.12775	33
1283	3.10823	34	1313	3.11826	34	1343	3.12808	32
1284	3.10857	33	1314	3.11860	33	1344	3.12840	32
1285	3.10890	34	1315	3.11893	33	1345	3.12872	33
1286	3.10924	34	1316	3.11926	33	1346	3.12905	32
1287	3.10958	34	1317	3.11959	33	1347	3.12937	32
1288	3.10992	33	1318	3.11992	32	1348	3.12969	32
1289	3.11025	34	1319	3.12024	33	1349	3.13001	32
1290	3.11059		1320	3.12057		1350	3.13033	



Nomb.	o. 22' 30"	D.	Nomb.	o. 23' 0"	D.	Nomb.	o. 23' 30"	D.
	Logarit.			Logarit.			Logarit.	
1350	3.13033	31	1380	3.13988	31	1410	3.14922	31
1351	3.13066	32	1381	3.14019	32	1411	3.14953	30
1352	3.13098	32	1382	3.14051	31	1412	3.14985	31
1353	3.13130	32	1383	3.14082	32	1413	3.15014	31
1354	3.13162	32	1384	3.14114	31	1414	3.15045	31
1355	3.13194	32	1385	3.14145	31	1415	3.15076	30
1356	3.13226	32	1386	3.14176	32	1416	3.15106	31
1357	3.13258	32	1387	3.14208	31	1417	3.15137	31
1358	3.13290	32	1388	3.14239	31	1418	3.15168	30
1359	3.13322	32	1389	3.14270	31	1419	3.15198	31
1360	3.13354	32	1390	3.14301	32	1420	3.15229	30
1361	3.13386	32	1391	3.14333	31	1421	3.15259	31
1362	3.13418	32	1392	3.14364	31	1422	3.15290	30
1363	3.13450	31	1393	3.14395	31	1423	3.15320	31
1364	3.13481	32	1394	3.14426	31	1424	3.15351	30
1365	3.13513	32	1395	3.14457	32	1425	3.15381	31
1366	3.13545	32	1396	3.14489	31	1426	3.15412	30
1367	3.13577	32	1397	3.14520	31	1427	3.15442	31
1368	3.13609	31	1398	3.14551	31	1428	3.15473	30
1369	3.13640	32	1399	3.14582	31	1429	3.15503	31
1370	3.13672	32	1400	3.14613	31	1430	3.15534	30
1371	3.13704	31	1401	3.14644	31	1431	3.15564	30
1372	3.13735	32	1402	3.14675	31	1432	3.15594	31
1373	3.13767	32	1403	3.14706	31	1433	3.15625	30
1374	3.13799	31	1404	3.14737	31	1434	3.15655	30
1375	3.13830	32	1405	3.14768	31	1435	3.15685	30
1376	3.13862	31	1406	3.14799	30	1436	3.15715	31
1377	3.13893	32	1407	3.14829	31	1437	3.15746	30
1378	3.13925	31	1408	3.14860	31	1438	3.15776	30
1379	3.13956	32	1409	3.14891	31	1439	3.15806	30
1380	3.13988		1410	3.14922		1440	3.15836	



Nomb.	o. 24' 0"	D.	Nomb.	o. 24' 30"	D.	Nomb.	o. 25' 0"	D.
	Logarit.			Logarit.			Logarit.	
1440	3.15836	30	1470	3.16752	29	1500	3.17609	29
1441	3.15866	31	1471	3.16761	30	1501	3.17638	29
1442	3.15897	30	1472	3.16791	29	1502	3.17667	29
1443	3.15927	30	1473	3.16820	30	1503	3.17696	29
1444	3.15957	30	1474	3.16850	29	1504	3.17725	29
1445	3.15987	30	1475	3.16879	30	1505	3.17754	28
1446	3.16017	30	1476	3.16909	29	1506	3.17782	29
1447	3.16047	30	1477	3.16938	29	1507	3.17811	29
1448	3.16077	30	1478	3.16967	30	1508	3.17840	29
1449	3.16107	30	1479	3.16997	29	1509	3.17869	29
1450	3.16137	30	1480	3.17026	30	1510	3.17898	28
1451	3.16167	30	1481	3.17056	29	1511	3.17926	29
1452	3.16197	30	1482	3.17085	29	1512	3.17955	29
1453	3.16227	29	1483	3.17114	29	1513	3.17984	29
1454	3.16256	30	1484	3.17143	30	1514	3.18013	28
1455	3.16286	30	1485	3.17173	29	1515	3.18041	29
1456	3.16316	30	1486	3.17202	29	1516	3.18070	29
1457	3.16346	30	1487	3.17231	29	1517	3.18099	28
1458	3.16376	30	1488	3.17260	29	1518	3.18127	29
1459	3.16406	29	1489	3.17289	30	1519	3.18156	28
1460	3.16435	30	1490	3.17319	29	1520	3.18184	29
1461	3.16465	30	1491	3.17348	29	1521	3.18213	28
1462	3.16495	29	1492	3.17377	29	1522	3.18241	29
1463	3.16524	30	1493	3.17406	29	1523	3.18270	28
1464	3.16554	30	1494	3.17435	29	1524	3.18298	29
1465	3.16584	29	1495	3.17464	29	1525	3.18327	28
1466	3.16613	30	1496	3.17493	29	1526	3.18355	29
1467	3.16643	30	1497	3.17522	29	1527	3.18384	28
1468	3.16673	29	1498	3.17551	29	1528	3.18412	29
1469	3.16702	30	1499	3.17580	29	1529	3.18441	28
1470	3.16732		1500	3.17609		1530	3.18469	

Nomb.	0.25'30"	D.	Nomb.	0.26'0"	D.	Nomb.	0.26'30"	D.
	Logarit.			Logarit.			Logarit.	
1550	3.18469	29	1560	3.19312	28	1590	3.20140	27
1551	3.18498	28	1561	3.19340	28	1591	3.20167	27
1552	3.18526	28	1562	3.19368	28	1592	3.20194	28
1553	3.18554	29	1563	3.19396	28	1593	3.20222	27
1554	3.18583	28	1564	3.19424	27	1594	3.20249	27
1555	3.18611	28	1565	3.19451	28	1595	3.20276	27
1556	3.18639	28	1566	3.19479	28	1596	3.20303	27
1557	3.18667	29	1567	3.19507	28	1597	3.20330	28
1558	3.18696	28	1568	3.19535	27	1598	3.20358	27
1559	3.18724	28	1569	3.19562	28	1599	3.20385	27
1540	3.18752	28	1570	3.19590	28	1600	3.20412	27
1541	3.18780	28	1571	3.19618	27	1601	3.20439	27
1542	3.18808	29	1572	3.19645	28	1602	3.20466	27
1543	3.18837	28	1573	3.19673	28	1603	3.20493	27
1544	3.18865	28	1574	3.19700	28	1604	3.20520	28
1545	3.18893	28	1575	3.19728	28	1605	3.20548	27
1546	3.18921	28	1576	3.19756	27	1606	3.20575	27
1547	3.18949	28	1577	3.19783	28	1607	3.20602	27
1548	3.18977	28	1578	3.19811	27	1608	3.20629	27
1549	3.19005	28	1579	3.19838	28	1609	3.20656	27
1550	3.19033	28	1580	3.19866	27	1610	3.20683	27
1551	3.19061	28	1581	3.19893	28	1611	3.20710	27
1552	3.19089	28	1582	3.19921	27	1612	3.20737	26
1553	3.19117	28	1583	3.19948	28	1613	3.20765	27
1554	3.19145	28	1584	3.19976	27	1614	3.20790	27
1555	3.19173	28	1585	3.20003	27	1615	3.20817	27
1556	3.19201	28	1586	3.20030	28	1616	3.20844	27
1557	3.19229	28	1587	3.20058	27	1617	3.20871	27
1558	3.19257	28	1588	3.20085	27	1618	3.20898	27
1559	3.19285	27	1589	3.20112	28	1619	3.20925	27
1560	3.19312		1590	3.20140		1620	3.20952	27

Nomb.	o. 27' 0"	D.	Nomb.	o. 27' 30"	D.	Nomb.	o. 28' 0"	D.
	Logarit.			Logarit.			Logarit.	
1620	3.20952	26	1650	3.21748	27	1680	3.22551	26
1621	3.20978	27	1651	3.21775	26	1681	3.22557	26
1622	3.21005	37	1652	3.21801	26	1682	3.22583	25
1623	3.21032	27	1653	3.21827	27	1683	3.22608	26
1624	3.21059	26	1654	3.21854	26	1684	3.22634	26
1625	3.21085	27	1655	3.21880	26	1685	3.22660	26
1626	3.21112	27	1656	3.21906	26	1686	3.22686	26
1627	3.21139	28	1657	3.21932	26	1687	3.22712	25
1628	3.21165	27	1658	3.21958	27	1688	3.22737	26
1629	3.21192	27	1659	3.21985	26	1689	3.22763	26
1630	3.21219	26	1660	3.22011	26	1690	3.22789	25
1631	3.21245	27	1661	3.22037	26	1691	3.22814	26
1632	3.21272	27	1662	3.22063	26	1692	3.22840	26
1633	3.21299	26	1663	3.22089	26	1693	3.22866	25
1634	3.21325	27	1664	3.22115	26	1694	3.22891	26
1635	3.21352	26	1665	3.22141	26	1695	3.22917	26
1636	3.21378	27	1666	3.22167	27	1696	3.22943	25
1637	3.21405	26	1667	3.22194	26	1697	3.22968	26
1638	3.21431	27	1668	3.22220	26	1698	3.22994	25
1639	3.21458	26	1669	3.22246	26	1699	3.23019	26
1640	3.21484	27	1670	3.22272	26	1700	3.23045	25
1641	3.21511	26	1671	3.22298	26	1701	3.23070	26
1642	3.21537	27	1672	3.22324	26	1702	3.23096	25
1643	3.21564	26	1673	3.22350	26	1703	3.23121	26
1644	3.21590	27	1674	3.22376	25	1704	3.23147	25
1645	3.21617	26	1675	3.22401	26	1705	3.23172	26
1646	3.21643	26	1676	3.22427	26	1706	3.23198	25
1647	3.21669	27	1677	3.22453	26	1707	3.23223	26
1648	3.21696	26	1678	3.22479	26	1708	3.23249	25
1649	3.21722	26	1679	3.22505	26	1709	3.23274	26
1650	3.21748	26	1680	3.22531		1710	3.23300	



Nomb.	0.28'30"	D.	Nomb	0.29'0"	D.	Nomb.	0.29'30"	D.
	Logarit.			Logarit			Logarit.	
1710	3.23300	25	1740	3.24055	25	1770	3.24797	25
1711	3.23325	25	1741	3.24080	25	1771	3.24822	24
1712	3.23350	26	1742	3.24105	25	1772	3.24846	25
1713	3.23376	25	1743	3.24130	25	1773	3.24871	24
1714	3.23401	25	1744	3.24155	25	1774	3.24895	25
1715	3.23426	26	1745	3.24180	24	1775	3.24920	24
1716	3.23452	25	1746	3.24204	25	1776	3.24944	25
1717	3.23477	25	1747	3.24229	25	1777	3.24969	24
1718	3.23502	26	1748	3.24254	25	1778	3.24993	25
1719	3.23528	25	1749	3.24279	25	1779	3.25018	24
1720	3.23553	25	1750	3.24304	25	1780	3.25042	24
1721	3.23578	25	1751	3.24329	24	1781	3.25066	25
1722	3.23603	26	1752	3.24353	25	1782	3.25091	24
1723	3.23629	25	1753	3.24378	25	1783	3.25115	24
1724	3.23654	25	1754	3.24403	25	1784	3.25139	25
1725	3.23679	25	1755	3.24428	24	1785	3.25164	24
1726	3.23704	25	1756	3.24452	25	1786	3.25188	24
1727	3.23729	25	1757	3.24477	25	1787	3.25212	25
1728	3.23754	25	1758	3.24502	25	1788	3.25237	24
1729	3.23779	26	1759	3.24527	24	1789	3.25261	24
1730	3.23805	25	1760	3.24551	25	1790	3.25285	25
1731	3.23830	25	1761	3.24576	25	1791	3.25310	24
1732	3.23855	25	1762	3.24601	24	1792	3.25334	24
1733	3.23880	25	1763	3.24625	25	1793	3.25358	24
1734	3.23905	25	1764	3.24650	24	1794	3.25382	24
1735	3.23930	25	1765	3.24674	25	1795	3.25406	25
1736	3.23955	25	1766	3.24699	25	1796	3.25431	24
1737	3.23980	25	1767	3.24724	24	1797	3.25455	24
1738	3.24005	25	1768	3.24748	25	1798	3.25479	24
1739	3.24030	25	1769	3.24773	24	1799	3.25503	24
1740	3.24055		1770	3.24797		1800	3.25527	



Nomb.	o. 30' 0"	D.	Nomb.	o. 30' 30"	D.	Nomb.	o. 31' 0"	D.
	Logarit.			Logarit.			Logarit.	
1800	3.25527	24	1830	3.26245	24	1860	3.26951	24
1801	3.25551	24	1831	3.26269	24	1861	3.26975	23
1802	3.25575	25	1832	3.26293	25	1862	3.26998	25
1803	3.25600	24	1833	3.26316	24	1863	3.27021	24
1804	3.25624	24	1834	3.26340	24	1864	3.27045	23
1805	3.25648	24	1835	3.26364	23	1865	3.27068	23
1806	3.25672	24	1836	3.26387	24	1866	3.27091	23
1807	3.25696	24	1837	3.26411	24	1867	3.27114	24
1808	3.25720	24	1838	3.26435	23	1868	3.27138	23
1809	3.25744	24	1839	3.26458	24	1869	3.27161	23
1810	3.25768	24	1840	3.26482	23	1870	3.27184	23
1811	3.25792	24	1841	3.26505	24	1871	3.27207	24
1812	3.25816	24	1842	3.26529	24	1872	3.27231	23
1813	3.25840	24	1843	3.26553	23	1873	3.27254	23
1814	3.25864	24	1844	3.26576	24	1874	3.27277	23
1815	3.25888	24	1845	3.26600	23	1875	3.27300	23
1816	3.25912	23	1846	3.26623	24	1876	3.27323	23
1817	3.25935	24	1847	3.26647	23	1877	3.27346	24
1818	3.25959	24	1848	3.26670	24	1878	3.27370	23
1819	3.25983	24	1849	3.26694	23	1879	3.27393	23
1820	3.26007	24	1850	3.26717	24	1880	3.27416	23
1821	3.26031	24	1851	3.26741	23	1881	3.27439	23
1822	3.26055	24	1852	3.26764	24	1882	3.27462	23
1823	3.26079	23	1853	3.26788	23	1883	3.27485	23
1824	3.26102	24	1854	3.26811	23	1884	3.27508	23
1825	3.26126	24	1855	3.26834	24	1885	3.27531	23
1826	3.26150	24	1856	3.26858	23	1886	3.27554	23
1827	3.26174	24	1857	3.26881	24	1887	3.27577	23
1828	3.26198	23	1858	3.26905	23	1888	3.27600	23
1829	3.26221	24	1859	3.26928	23	1889	3.27623	23
1830	3.26245	24	1860	3.26951	23	1890	3.27646	23

Nomb.	o. 51' 30"	D.	Nomb.	o. 52' 0"	D.	Nomb.	o. 52' 30"	D.
	Logarit.			Logarit.			Logarit.	
1890	5.27646	25	1920	5.28330	23	1950	5.29003	23
1891	5.27669	25	1921	5.28353	22	1951	5.29026	22
1892	5.27692	25	1922	5.28375	23	1952	5.29048	22
1893	5.27715	23	1923	5.28398	23	1953	5.29070	22
1894	5.27738	23	1924	5.28421	22	1954	5.29092	23
1895	5.27761	23	1925	5.28443	22	1955	5.29115	22
1896	5.27784	23	1926	5.28466	22	1956	5.29137	22
1897	5.27807	23	1927	5.28488	23	1957	5.29159	22
1898	5.27830	22	1928	5.28511	22	1958	5.29181	22
1899	5.27852	23	1929	5.28533	23	1959	5.29203	23
1900	5.27875	23	1930	5.28556	22	1960	5.29226	22
1901	5.27898	23	1931	5.28578	23	1961	5.29248	22
1902	5.27921	23	1932	5.28601	22	1962	5.29270	22
1903	5.27944	23	1933	5.28623	23	1963	5.29292	22
1904	5.27967	22	1934	5.28646	22	1964	5.29314	22
1905	5.27989	23	1935	5.28668	23	1965	5.29336	22
1906	5.28012	23	1936	5.28691	22	1966	5.29358	22
1907	5.28035	23	1937	5.28713	22	1967	5.29380	23
1908	5.28058	23	1938	5.28735	23	1968	5.29403	22
1909	5.28081	22	1939	5.28758	22	1969	5.29425	22
1910	5.28103	23	1940	5.28780	23	1970	5.29447	22
1911	5.28126	23	1941	5.28803	22	1971	5.29469	22
1912	5.28149	22	1942	5.28825	22	1972	5.29491	22
1913	5.28171	23	1943	5.28847	23	1973	5.29513	22
1914	5.28194	23	1944	5.28870	22	1974	5.29535	22
1915	5.28217	23	1945	5.28892	22	1975	5.29557	22
1916	5.28240	22	1946	5.28914	23	1976	5.29579	22
1917	5.28262	23	1947	5.28937	22	1677	5.29601	22
1918	5.28285	22	1948	5.28959	22	1978	5.29623	22
1919	5.28307	23	1949	5.28981	22	1979	5.29645	22
1920	5.28330		1950	5.29003		1980	5.29667	

Nomb.	o. 33' 0"	D.	Nomb.	o. 33' 50"	D.	Nomb.	o. 34' 0"	D.
	Logarit.			Logarit.			Logarit.	
1980	3.29667		2010	3.30320	21	2040	3.30963	21
1981	3.29688	21	2011	3.30341	22	2041	3.30984	22
1982	3.29710	22	2012	3.30363	21	2042	3.31006	21
		22			21			21
1983	3.29732	22	2015	3.30384	22	2043	3.31027	21
1984	3.29754	22	2014	3.30406	22	2044	3.31048	21
1985	3.29776	22	2015	3.30428	21	2045	3.31069	22
		22			21			22
1986	3.29798	22	2016	3.30449	22	2046	3.31091	21
1987	3.29820	22	2017	3.30471	21	2047	3.31112	21
1988	3.29842	21	2018	3.30492	22	2048	3.31133	21
		21			22			21
1989	3.29863	22	2019	3.30514	21	2049	3.31154	21
1990	3.29885	22	2020	3.30535	22	2050	3.31175	22
1991	3.29907	22	2021	3.30557	21	2051	3.31197	21
		22			21			21
1992	3.29929	22	2022	3.30578	22	2052	3.31218	21
1993	3.29951	22	2023	3.30600	21	2053	3.31239	21
1994	3.29973	21	2024	3.30621	22	2054	3.31260	21
		21			22			21
1995	3.29994	22	2025	3.30643	21	2055	3.31281	21
1996	3.30016	22	2026	3.30664	21	2056	3.31302	21
1997	3.30038	22	2027	3.30685	22	2057	3.31323	22
		22			22			22
1998	3.30060	21	2028	3.30707	21	2058	3.31345	21
1999	3.30081	22	2029	3.30728	22	2059	3.31366	21
2000	3.30103	22	2030	3.30750	21	2060	3.31387	21
		22			21			21
2001	3.30125	21	2031	3.30771	21	2061	3.31408	21
2002	3.30146	22	2032	3.30792	22	2062	3.31429	21
2003	3.30168	22	2033	3.30814	21	2063	3.31450	21
		22			21			21
2004	3.30190	21	2034	3.30835	21	2064	3.31471	21
2005	3.30211	22	2035	3.30856	22	2065	3.31492	21
2006	3.30233	22	2036	3.30878	21	2066	3.31513	21
		22			21			21
2007	3.30255	21	2037	3.30899	21	2067	3.31534	21
2008	3.30276	22	2038	3.30920	22	2068	3.31555	21
2009	3.30298	22	2039	3.30942	21	2069	3.31576	21
2010	3.30320		2040	3.30963		2070	3.31597	



Nomb.	o.54'30"	D.	Nomb.	o.55'0"	D.	Nomb.	o.55'30"	D.
	Logarit.			Logarit.			Logarit.	
2070	3.31597	21	2100	3.32222	21	2130	3.32838	20
2071	3.31618	21	2101	3.32243	20	2131	3.32858	21
2072	3.31639	21	2102	3.32263	21	2132	3.32879	20
2073	3.31660	21	2103	3.32284	21	2133	3.32899	20
2074	3.31681	21	2104	3.32305	20	2134	3.32919	21
2075	3.31702	21	2105	3.32325	21	2135	3.32940	20
2076	3.31723	21	2106	3.32346	20	2136	3.32960	20
2077	3.31744	21	2107	3.32366	21	2137	3.32980	21
2078	3.31765	20	2108	3.32387	21	2138	3.33001	20
2079	3.31785	21	2109	3.32408	20	2139	3.33021	20
2080	3.31806	21	2110	3.32428	21	2140	3.33041	21
2081	3.31827	21	2111	3.32449	20	2141	3.33062	20
2082	3.31848	21	2112	3.32469	21	2142	3.33082	20
2083	3.31869	21	2113	3.32490	20	2143	3.33102	20
2084	3.31890	21	2114	3.32510	21	2144	3.33122	21
2085	3.31911	20	2115	3.32531	21	2145	3.33143	20
2086	3.31931	21	2116	3.32552	20	2146	3.33163	20
2087	3.31952	21	2117	3.32572	21	2147	3.33183	20
2088	3.31973	21	2118	3.32593	20	2148	3.33203	21
2089	3.31994	21	2119	3.32613	21	2149	3.33224	20
2090	3.32015	20	2120	3.32634	20	2150	3.33244	20
2091	3.32035	21	2121	3.32654	21	2151	3.33264	20
2092	3.32056	21	2122	3.32675	20	2152	3.33284	20
2093	3.32077	21	2123	3.32695	20	2153	3.33304	21
2094	3.32098	20	2124	3.32715	21	2154	3.33325	20
2095	3.32118	21	2125	3.32736	20	2155	3.33345	20
2096	3.32139	21	2126	3.32756	21	2156	3.33365	20
2097	3.32160	21	2127	3.32777	20	2157	3.33385	20
2098	3.32181	20	2128	3.32797	21	2158	3.33405	20
2099	3.32201	20	2129	3.32818	20	2159	3.33425	20
2100	3.32222	20	2130	3.32838	20	2160	3.33445	20



Nomb.	o. 36' 0"	D.	Nomb.	o. 36' 30"	D.	Nomb.	o. 37' 0"	D.
	Logarit.			Logarit.			Logarit.	
2160	3.33445	20	2190	3.34044	20	2220	3.34635	20
2161	3.33465	21	2191	3.34064	20	2221	3.34655	19
2162	3.33486	20	2192	3.34084	20	2222	3.34674	20
2163	3.33506	20	2193	3.34104	20	2223	3.34694	19
2164	3.33526	20	2194	3.34124	19	2224	3.34713	20
2165	3.33546	20	2195	3.34143	20	2225	3.34733	20
2166	3.33566	20	2196	3.34163	20	2226	3.34753	19
2167	3.33586	20	2197	3.34183	20	2227	3.34772	20
2168	3.33606	20	2198	3.34203	20	2228	3.34792	19
2169	3.33626	20	2199	3.34223	19	2229	3.34811	19
2170	3.33646	20	2200	3.34242	20	2230	3.34830	20
2171	3.33666	20	2201	3.34262	20	2231	3.34850	19
2172	3.33686	20	2202	3.34282	19	2232	3.34869	20
2173	3.33706	20	2203	3.34301	20	2233	3.34889	19
2174	3.33726	20	2204	3.34321	20	2234	3.34908	20
2175	3.33746	20	2205	3.34341	20	2235	3.34928	19
2176	3.33766	20	2206	3.34361	19	2236	3.34947	20
2177	3.33786	20	2207	3.34380	20	2237	3.34967	19
2178	3.33806	20	2208	3.34400	20	2238	3.34986	19
2179	3.33826	20	2209	3.34420	19	2239	3.35005	20
2180	3.33846	20	2210	3.34439	20	2240	3.35025	19
2181	3.33866	19	2211	3.34459	20	2241	3.35044	20
2182	3.33885	20	2212	3.34479	19	2242	3.35064	19
2183	3.33905	20	2213	3.34498	20	2243	3.35083	19
2184	3.33925	20	2214	3.34518	19	2244	3.35102	20
2185	3.33945	20	2215	3.34537	20	2245	3.35122	19
2186	3.33965	20	2216	3.34557	20	2246	3.35141	19
2187	3.33985	20	2217	3.34577	19	2247	3.35160	20
2188	3.34005	20	2218	3.34596	20	2248	3.35180	19
2189	3.34025	19	2219	3.34616	19	2249	3.35199	19
2190	3.34044		2220	3.34635		2250	3.35218	

0.37'50"			0.38'0"			0.38'50"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
2250	3.35218	20	2280	3.35793	20	2310	3.36361	19
2251	3.35238	19	2281	3.35813	19	2311	3.36380	19
2252	3.35257	19	2282	3.35832	19	2312	3.36399	19
2253	3.35276	19	2283	3.35851	19	2313	3.36418	18
2254	3.35295	20	2284	3.35870	19	2314	3.36436	19
2255	3.35315	19	2285	3.35889	19	2315	3.36455	19
2256	3.35334	19	2286	3.35908	19	2316	3.36474	19
2257	3.35353	19	2287	3.35927	19	2317	3.36493	18
2258	3.35372	20	2288	3.35946	19	2318	3.36511	19
2259	3.35392	19	2289	3.35965	19	2319	3.36530	19
2260	3.35411	19	2290	3.35984	19	2320	3.36549	19
2261	3.35430	19	2291	3.36003	18	2321	3.36568	18
2262	3.35449	19	2292	3.36021	19	2322	3.36586	19
2263	3.35468	20	2293	3.36040	19	2323	3.36605	19
2264	3.35488	19	2294	3.36059	19	2324	3.36624	18
2265	3.35507	19	2295	3.36078	19	2325	3.36642	19
2266	3.35526	19	2296	3.36097	19	2326	3.36661	19
2267	3.35545	19	2297	3.36116	19	2327	3.36680	18
2268	3.35564	19	2298	3.36135	19	2328	3.36698	19
2269	3.35583	20	2299	3.36154	19	2329	3.36717	19
2270	3.35603	19	2300	3.36173	19	2330	3.36736	18
2271	3.35622	19	2301	3.36192	19	2331	3.36754	19
2272	3.35641	19	2302	3.36211	18	2332	3.36773	18
2273	3.35660	19	2303	3.36229	19	2333	3.36791	19
2274	3.35679	19	2304	3.36248	19	2334	3.36810	19
2275	3.35698	19	2305	3.36267	19	2335	3.36829	18
2276	3.35717	19	2306	3.36286	19	2336	3.36847	19
2277	3.35736	19	2307	3.36305	19	2337	3.36866	18
2278	3.35755	19	2308	3.36324	18	2338	3.36884	19
2279	3.35774	19	2309	3.36342	19	2339	3.36903	19
2280	3.35793	19	2310	3.36361	19	2340	3.36922	19

Nomb.	o. 39' 0"	D.	Nomb.	o. 39' 30"	D.	Nomb.	o. 40' 0"	D.
	Logarit.			Logarit.			Logarit.	
2340	3.36922	18	2370	3.37475	18	2400	3.38021	18
2341	3.36940	19	2371	3.37495	18	2401	3.38039	18
2342	3.36959	18	2372	3.37511	19	2402	3.38057	18
2343	3.36977	19	2373	3.37530	18	2403	3.38075	18
2344	3.36996	18	2374	3.37548	18	2404	3.38093	19
2345	3.37014	19	2375	3.37566	19	2405	3.38112	18
2346	3.37033	18	2376	3.37585	18	2406	3.38130	18
2347	3.37051	19	2377	3.37603	18	2407	3.38148	18
2348	3.37070	18	2378	3.37621	18	2408	3.38166	18
2349	3.37088	19	2379	3.37639	19	2409	3.38184	18
2350	3.37107	18	2380	3.37658	18	2410	3.38202	18
2351	3.37125	19	2381	3.37676	18	2411	3.38220	18
2352	3.37144	18	2382	3.37694	18	2412	3.38238	18
2353	3.37162	19	2383	3.37712	19	2413	3.38256	18
2354	3.37181	18	2384	3.37731	18	2414	3.38274	18
2355	3.37199	19	2385	3.37749	18	2415	3.38292	18
2356	3.37218	18	2386	3.37767	18	2416	3.38310	18
2357	3.37236	18	2387	3.37785	18	2417	3.38328	18
2358	3.37254	19	2388	3.37803	19	2418	3.38346	18
2359	3.37273	18	2389	3.37822	18	2419	3.38364	18
2360	3.37291	19	2390	3.37840	18	2420	3.38382	17
2361	3.37310	18	2391	3.37858	18	2421	3.38399	18
2362	3.37328	18	2392	3.37876	18	2422	3.38417	18
2363	3.37346	19	2393	3.37894	18	2423	3.38435	18
2364	3.37365	18	2394	3.37912	19	2424	3.38453	18
2365	3.37383	18	2395	3.37931	18	2425	3.38471	18
2366	3.37401	19	2396	3.37949	18	2426	3.38489	18
2367	3.37420	18	2397	3.37967	18	2427	3.38507	18
2368	3.37438	19	2398	3.37985	18	2428	3.38525	18
2369	3.37457	18	2399	3.38003	18	2429	3.38543	18
2370	3.37475		2400	3.38021	18	2430	3.38561	18



Nomb.	0.40'30"	D.	Nomb.	0.41'0"	D.	Nomb.	0.41'30'	D.
	Logarit.			Logarit.			Logarit.	
2430	3.38561	17	2460	3.39094	17	2490	3.39620	17
2431	3.38578	18	2461	3.39111	18	2491	3.39637	18
2432	3.38596	18	2462	3.39129	17	2492	3.39655	17
2433	3.38614	18	2463	3.39146	18	2493	3.39672	18
2434	3.38632	18	2464	3.39164	18	2494	3.39690	17
2435	3.38650	18	2465	3.39182	17	2495	3.39707	17
2436	3.38668	18	2466	3.39199	18	2496	3.39724	18
2437	3.38686	17	2467	3.39217	18	2497	3.39742	17
2438	3.38703	18	2468	3.39235	17	2498	3.39759	18
2439	3.38721	18	2469	3.39252	18	2499	3.39777	17
2440	3.38739	18	2470	3.39270	17	2500	3.39794	17
2441	3.38757	18	2471	3.39287	18	2501	3.39811	18
2442	3.38775	17	2472	3.39305	17	2502	3.39829	17
2443	3.38792	18	2473	3.39322	18	2503	3.39846	17
2444	3.38810	18	2474	3.39340	18	2504	3.39863	18
2445	3.38828	18	2475	3.39358	17	2505	3.39881	17
2446	3.38846	17	2476	3.39375	18	2506	3.39898	17
2447	3.38863	18	2477	3.39393	17	2507	3.39915	18
2448	3.38881	18	2478	3.39410	18	2508	3.39933	17
2449	3.38899	18	2479	3.39428	17	2509	3.39950	17
2450	3.38917	17	2480	3.39445	18	2510	3.39967	18
2451	3.38934	18	2481	3.39463	17	2511	3.39985	17
2452	3.38952	18	2482	3.39480	18	2512	3.40002	17
2453	3.38970	17	2483	3.39498	17	2513	3.40019	18
2454	3.38987	18	2484	3.39515	18	2514	3.40037	17
2455	3.39005	18	2485	3.39533	17	2515	3.40054	17
2456	3.39023	18	2486	3.39550	18	2516	3.40071	17
2457	3.39041	17	2487	3.39568	17	2517	3.40088	18
2458	3.39058	18	2488	3.39585	17	2518	3.40106	17
2459	3.39076	18	2489	3.39602	18	2519	3.40123	17
2460	3.39094	18	2490	3.39620	18	2520	3.40140	17



Nomb.	o. 42' 0"	D.	Nomb.	o. 42' 30"	D.	Nomb.	o. 43' 0"	D.
	Logarit.			Logarit.			Logarit.	
2520	3.40140	17	2550	3.40654	17	2580	3.41162	17
2521	3.40157	18	2551	3.40671	17	2581	3.41179	17
2522	3.40175	17	2552	3.40688	17	2582	3.41196	16
2523	3.40192	17	2553	3.40705	17	2583	3.41212	17
2524	3.40209	17	2554	3.40722	17	2584	3.41229	17
2525	3.40226	17	2555	3.40739	17	2585	3.41246	17
2526	3.40243	18	2556	3.40756	17	2586	3.41263	17
2527	3.40261	17	2557	3.40773	17	2587	3.41280	16
2528	3.40278	17	2558	3.40790	17	2588	3.41296	17
2529	3.40295	17	2559	3.40807	17	2589	3.41313	17
2530	3.40312	17	2560	3.40824	17	2590	3.41330	17
2531	3.40329	17	2561	3.40841	17	2591	3.41347	16
2532	3.40346	18	2562	3.40858	17	2592	3.41363	17
2533	3.40364	17	2563	3.40875	17	2593	3.41380	17
2534	3.40381	17	2564	3.40892	17	2594	3.41397	17
2535	3.40398	17	2565	3.40909	17	2595	3.41414	16
2536	3.40415	17	2566	3.40926	17	2596	3.41430	17
2537	3.40432	17	2567	3.40943	17	2597	3.41447	17
2538	3.40449	17	2568	3.40960	16	2598	3.41464	17
2539	3.40466	17	2569	3.40976	17	2599	3.41481	16
2540	3.40483	17	2570	3.40995	17	2600	3.41497	17
2541	3.40500	18	2571	3.41010	17	2601	3.41514	17
2542	3.40518	17	2572	3.41027	17	2602	3.41531	16
2543	3.40535	17	2573	3.41044	17	2603	3.41547	17
2544	3.40552	17	2574	3.41061	17	2604	3.41564	17
2545	3.40569	17	2575	3.41078	17	2605	3.41581	16
2546	3.40586	17	2576	3.41095	17	2606	3.41597	17
2547	3.40603	17	2577	3.41111	16	2607	3.41614	17
2548	3.40620	17	2578	3.41128	17	2608	3.41631	16
2549	3.40637	17	2579	3.41145	17	2609	3.41647	17
2550	3.40654	17	2580	3.41162	17	2610	3.41664	17

Nomb.	o 43'30"	D.	Nomb.	o. 44' 0"	D.	Nomb.	o. 44'30"	D.
	Logarit.			Logarit.			Logarit.	
2610	3.41664	17	2640	3.42160	17	2670	3.42651	16
2611	3.41681	16	2641	3.42177	16	2671	3.42667	17
2612	3.41697	17	2642	3.42193	17	2672	3.42684	16
2613	3.41714	17	2643	3.42210	16	2673	3.42700	16
2614	3.41731	16	2644	3.42226	17	2674	3.42716	16
2615	3.41747	17	2645	3.42243	16	2675	3.42732	17
2616	3.41764	16	2646	3.42259	16	2676	3.42749	16
2617	3.41780	17	2647	3.42275	17	2677	3.42765	16
2618	3.41797	17	2648	3.42292	16	2678	3.42781	16
2619	3.41814	16	2649	3.42308	17	2679	3.42797	16
2620	3.41830	17	2650	3.42325	16	2680	3.42813	17
2621	3.41847	16	2651	3.42341	16	2681	3.42830	16
2622	3.41863	17	2652	3.42357	17	2682	3.42846	16
2623	3.41880	16	2653	3.42374	16	2683	3.42862	16
2624	3.41896	17	2654	3.42390	16	2684	3.42878	16
2625	3.41913	16	2655	3.42406	17	2685	3.42894	17
2626	3.41929	17	2656	3.42423	16	2686	3.42911	16
2627	3.41946	17	2657	3.42439	16	2687	3.42927	16
2628	3.41963	16	2658	3.42455	17	2688	3.42943	16
2629	3.41979	17	2659	3.42472	16	2689	3.42959	16
2630	3.41996	16	2660	3.42488	16	2690	3.42975	16
2631	3.42012	17	2661	3.42504	17	2691	3.42991	17
2632	3.42029	16	2662	3.42521	16	2692	3.43008	16
2633	3.42045	17	2663	3.42537	16	2693	3.43024	16
2634	3.42062	16	2664	3.42553	17	2694	3.43040	16
2635	3.42078	17	2665	3.42570	16	2695	3.43056	16
2636	3.42095	16	2666	3.42586	16	2696	3.43072	16
2637	3.42111	16	2667	3.42602	17	2697	3.43088	16
2638	3.42127	17	2668	3.42619	16	2698	3.43104	16
2639	3.42144	16	2669	3.42635	16	2699	3.43120	16
2640	3.42160	16	2670	3.42651	16	2700	3.43136	16

Nomb.	o.45' o"	D.	Nomb.	o.45'30"	D.	Nomb.	o.46' o"	D.
	Logarit.			Logarit.			Logarit.	
2700	3.43136	16	2750	3.43616	16	2760	3.44091	16
2701	3.43152	17	2751	3.43632	16	2761	3.44107	15
2702	3.43169	16	2752	3.43648	16	2762	3.44122	16
2703	3.43185	16	2753	3.43664	16	2763	3.44138	16
2704	3.43201	16	2754	3.43680	16	2764	3.44154	16
2705	3.43217	16	2755	3.43696	16	2765	3.44170	15
2706	3.43233	16	2756	3.43712	15	2766	3.44185	16
2707	3.43249	16	2757	3.43727	16	2767	3.44201	16
2708	3.43265	16	2758	3.43743	16	2768	3.44217	15
2709	3.43281	16	2759	3.43759	16	2769	3.44232	16
2710	3.43297	16	2740	3.43775	16	2770	3.44248	16
2711	3.43313	16	2741	3.43791	16	2771	3.44264	15
2712	3.43329	16	2742	3.43807	16	2772	3.44279	16
2713	3.43345	16	2743	3.43823	15	2773	3.44295	16
2714	3.43361	16	2744	3.43838	16	2774	3.44311	15
2715	3.43377	16	2745	3.43854	16	2775	3.44326	16
2716	3.43393	16	2746	3.43870	16	2776	3.44342	16
2717	3.43409	16	2747	3.43886	16	2777	3.44358	15
2718	3.43425	16	2748	3.43902	15	2778	3.44373	16
2719	3.43441	16	2749	3.43917	16	2779	3.44389	15
2720	3.43457	16	2750	3.43933	16	2780	3.44404	16
2721	3.43473	16	2751	3.43949	16	2781	3.44420	16
2722	3.43489	16	2752	3.43965	16	2782	3.44436	15
2723	3.43505	16	2753	3.43981	15	2783	3.44451	16
2724	3.43521	16	2754	3.43996	16	2784	3.44467	16
2725	3.43537	16	2755	3.44012	16	2785	3.44483	15
2726	3.43553	16	2756	3.44028	16	2786	3.44498	16
2727	3.43569	15	2757	3.44044	15	2787	3.44514	15
2728	3.43584	16	2758	3.44059	16	2788	3.44529	16
2729	3.43600	16	2759	3.44075	16	2789	3.44545	15
2730	3.43616	16	2760	3.44091	16	2790	3.44560	15



Nomb.	0.46'30"	D.	Nomb.	0.47'0"	D.	Nomb.	0.47'30"	D.
	Logarit.			Logarit.			Logarit.	
2790	3.44560	16	2820	3.45025	15	2850	3.45484	16
2791	3.44576	16	2821	3.45040	16	2851	3.45500	15
2792	3.44592	15	2822	3.45056	15	2852	3.45515	15
2793	3.44607	16	2823	3.45071	15	2853	3.45530	15
2794	3.44623	15	2824	3.45086	16	2854	3.45545	16
2795	3.44638	16	2825	3.45102	15	2855	3.45561	15
2796	3.44654	15	2826	3.45117	16	2856	3.45576	15
2797	3.44669	16	2827	3.45133	15	2857	3.45591	15
2798	3.44685	15	2828	3.45148	15	2858	3.45606	15
2799	3.44700	16	2829	3.45163	16	2859	3.45621	16
2800	3.44716	15	2830	3.45179	15	2860	3.45637	15
2801	3.44731	16	2831	3.45194	15	2861	3.45652	15
2802	3.44747	15	2832	3.45209	16	2862	3.45667	15
2803	3.44762	16	2833	3.45225	15	2863	3.45682	15
2804	3.44778	15	2834	3.45240	15	2864	3.45697	15
2805	3.44793	16	2835	3.45255	16	2865	3.45712	16
2806	3.44809	15	2836	3.45271	15	2866	3.45728	15
2807	3.44824	16	2837	3.45286	15	2867	3.45743	15
2808	3.44840	15	2838	3.45301	16	2868	3.45758	15
2809	3.44855	16	2839	3.45317	15	2869	3.45773	15
2810	3.44871	15	2840	3.45332	15	2870	3.45788	15
2811	3.44886	16	2841	3.45347	15	2871	3.45803	15
2812	3.44902	15	2842	3.45362	16	2872	3.45818	16
2813	3.44917	15	2843	3.45378	15	2873	3.45834	15
2814	3.44932	16	2844	3.45393	15	2874	3.45849	15
2815	3.44948	15	2845	3.45408	15	2875	3.45864	15
2816	3.44963	16	2846	3.45423	16	2876	3.45879	15
2817	3.44979	15	2847	3.45439	15	2877	3.45894	15
2818	3.44994	16	2848	3.45454	15	2878	3.45909	15
2819	3.45010	15	2849	3.45469	15	2879	3.45924	15
2820	3.45025	15	2850	3.45484	15	2880	3.45939	15



Nomb.	o. 48' o	D.	Nomb	o. 48' 30	D.	Nomb	o. 49' o'	D.
	Logarit			Logarit.			Logarit.	
2880	3.45936	15	2910	3.46386	15	2940	3.46835	15
2881	3.45954	15	2911	3.46404	15	2941	3.46850	14
2882	3.45969	15	2912	3.46419	15	2942	3.46864	15
2883	3.45984	16	2913	3.46434	15	2943	3.46879	15
2884	3.46000	15	2914	3.46449	15	2944	3.46894	15
2885	3.46015	15	2915	3.46464	15	2945	3.46909	14
2886	3.46030	15	2916	3.46479	15	2946	3.46925	15
2887	3.46045	15	2917	3.46494	15	2947	3.46938	15
2888	3.46060	15	2918	3.46509	14	2948	3.46953	14
2889	3.46075	15	2919	3.46523	15	2949	3.46967	15
2890	3.46090	15	2920	3.46538	15	2950	3.46982	15
2891	3.46105	15	2921	3.46553	15	2951	3.46997	15
2892	3.46120	15	2922	3.46568	15	2952	3.47012	14
2893	3.46135	15	2923	3.46583	15	2953	3.47026	15
2894	3.46150	15	2924	3.46598	15	2954	3.47041	15
2895	3.46165	15	2925	3.46613	15	2955	3.47056	14
2896	3.46180	15	2926	3.46627	14	2956	3.47070	15
2897	3.46195	15	2927	3.46642	15	2957	3.47085	15
2898	3.46210	15	2928	3.46657	15	2958	3.47100	14
2899	3.46225	15	2929	3.46672	15	2959	3.47114	15
2900	3.46240	15	2930	3.46687	15	2960	3.47129	15
2901	3.46255	15	2931	3.46702	15	2961	3.47144	15
2902	3.46270	15	2932	3.46716	14	2962	3.47159	15
2903	3.46285	15	2933	3.46731	15	2963	3.47173	14
2904	3.46300	15	2934	3.46746	15	2964	3.47188	15
2905	3.46315	15	2935	3.46761	15	2965	3.47202	14
2906	3.46330	15	2936	3.46776	15	2966	3.47217	15
2907	3.46345	14	2937	3.46790	14	2967	3.47232	15
2908	3.46359	15	2938	3.46805	15	2968	3.47246	14
2909	3.46374	15	2939	3.46820	15	2969	3.47261	15
2910	3.46389	15	2940	3.46835	15	2970	3.47276	15

Nomb.	0.49'30"	D.	Nomb.	0.50'0"	D.	Nomb.	0.50'30"	D.
	Logarit.			Logarit.			Logarit.	
2970	3.47276	14	3000	3.47712	15	3050	3.48144	15
2971	3.47290	15	3001	3.47727	14	3051	3.48159	14
2972	3.47305	14	3002	3.47741	15	3052	3.48173	14
2973	3.47319	15	3003	3.47756	14	3053	3.48187	15
2974	3.47334	15	3004	3.47770	14	3054	3.48202	14
2975	3.47349	14	3005	3.47784	15	3055	3.48216	14
2976	3.47363	15	3006	3.47799	14	3056	3.48230	14
2977	3.47378	14	3007	3.47813	15	3057	3.48244	15
2978	3.47392	15	3008	3.47828	14	3058	3.48259	14
2979	3.47407	15	3009	3.47842	15	3059	3.48273	14
2980	3.47422	14	3010	3.47857	14	3060	3.48287	15
2981	3.47436	15	3011	3.47871	14	3061	3.48302	14
2982	3.47451	14	3012	3.47885	15	3062	3.48316	14
2983	3.47465	15	3013	3.47900	14	3063	3.48330	14
2984	3.47480	14	3014	3.47914	15	3064	3.48344	15
2985	3.47494	15	3015	3.47929	14	3065	3.48359	14
2986	3.47509	15	3016	3.47943	15	3066	3.48373	14
2987	3.47524	14	3017	3.47958	14	3067	3.48387	14
2988	3.47538	15	3018	3.47972	14	3068	3.48401	15
2989	3.47553	14	3019	3.47986	15	3069	3.48416	14
2990	3.47567	15	3020	3.48001	14	3070	3.48430	14
2991	3.47582	14	3021	3.48015	14	3071	3.48444	14
2992	3.47596	15	3022	3.48029	15	3072	3.48458	15
2993	3.47611	14	3023	3.48044	14	3073	3.48473	14
2994	3.47625	15	3024	3.48058	15	3074	3.48487	14
2995	3.47640	14	3025	3.48073	14	3075	3.48501	14
2996	3.47654	15	3026	3.48087	14	3076	3.48515	15
2997	3.47669	14	3027	3.48101	15	3077	3.48530	14
2998	3.47683	15	3028	3.48116	14	3078	3.48544	14
2999	3.47698	14	3029	3.48130	14	3079	3.48558	14
3000	3.47712	14	3030	3.48144	14	3080	3.48572	14

Nomb.	o. 51' 0"	D.	Nomb.	o. 51' 30"	D.	Nomb.	o. 52' 0"	D.
	Logarit.			Logarit.			Logarit.	
3060	3.48572	14	3090	3.48996	14	3120	3.49415	14
3061	3.48586	15	3091	3.49010	14	3121	3.49429	14
3062	3.48601	14	3092	3.49024	14	3122	3.49443	14
3063	3.48615	14	3093	3.49038	14	3123	3.49457	14
3064	3.48629	14	3094	3.49052	14	3124	3.49471	14
3065	3.48643	14	3095	3.49066	14	3125	3.49485	14
3066	3.48657	14	3096	3.49080	14	3126	3.49499	14
3067	3.48671	15	3097	3.49094	14	3127	3.49513	14
3068	3.48686	14	3098	3.49108	14	3128	3.49527	14
3069	3.48700	14	3099	3.49122	14	3129	3.49541	13
3070	3.48714	14	3100	3.49136	14	3130	3.49554	14
3071	3.48728	14	3101	3.49150	14	3131	3.49568	14
3072	3.48742	14	3102	3.49164	14	3132	3.49582	14
3073	3.48756	14	3103	3.49178	14	3133	3.49596	14
3074	3.48770	15	3104	3.49192	14	3134	3.49610	14
3075	3.48785	14	3105	3.49206	14	3135	3.49624	14
3076	3.48799	14	3106	3.49220	14	3136	3.49638	15
3077	3.48813	14	3107	3.49234	14	3137	3.49651	14
3078	3.48827	14	3108	3.49248	14	3138	3.49665	14
3079	3.48841	14	3109	3.49262	14	3139	3.49679	14
3080	3.48855	14	3110	3.49276	14	3140	3.49693	14
3081	3.48869	14	3111	3.49290	14	3141	3.49707	14
3082	3.48883	14	3112	3.49304	14	3142	3.49721	13
3083	3.48897	14	3113	3.49318	14	3143	3.49734	14
3084	3.48911	15	3114	3.49332	14	3144	3.49748	14
3085	3.48926	14	3115	3.49346	14	3145	3.49762	14
3086	3.48940	14	3116	3.49360	14	3146	3.49776	14
3087	3.48954	14	3117	3.49374	14	3147	3.49790	13
3088	3.48968	14	3118	3.49388	14	3148	3.49803	14
3089	3.48982	14	3119	3.49402	15	3149	3.49817	14
3090	3.48996	14	3120	3.49415	15	3150	3.49831	14



0. 52' 30"			0. 53' 0"			0 53' 30'		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb	Logarit.	D.
3150	3.49831	14	3180	3.50243	15	3210	3.50651	13
3151	3.49845	14	3181	3.50256	14	3211	3.50664	14
3152	3.49859	15	3182	3.50270	14	3212	3.50678	13
3153	3.49872	14	3183	3.50284	13	3213	3.50691	14
3154	3.49886	14	3184	3.50297	14	3214	3.50705	13
3155	3.49900	14	3185	3.50311	14	3215	3.50718	14
3156	3.49914	15	3186	3.50325	13	3216	3.50732	13
3157	3.49927	14	3187	3.50338	14	3217	3.50745	14
3158	3.49941	14	3188	3.50352	13	3218	3.50759	13
3159	3.49955	14	3189	3.50365	14	3219	3.50772	14
3160	3.49969	15	3190	3.50379	14	3220	3.50786	13
3161	3.49982	14	3191	3.50393	13	3221	3.50799	14
3162	3.49996	14	3192	3.50406	14	3222	3.50813	15
3163	3.50010	14	3193	3.50420	15	3223	3.50826	14
3164	3.50024	13	3194	3.50433	14	3224	3.50840	15
3165	3.50037	14	3195	3.50447	14	3225	3.50853	13
3166	3.50051	14	3196	3.50461	13	3226	3.50866	14
3167	3.50065	14	3197	3.50474	14	3227	3.50880	13
3168	3.50079	15	3198	3.50488	13	3228	3.50893	14
3169	3.50092	14	3199	3.50501	14	3229	3.50907	13
3170	3.50106	14	3200	3.50515	14	3230	3.50920	14
3171	3.50120	13	3201	3.50529	15	3231	3.50934	15
3172	3.50133	14	3202	3.50542	14	3232	3.50947	14
3173	3.50147	14	3203	3.50556	15	3233	3.50961	15
3174	3.50161	13	3204	3.50569	14	3234	3.50974	13
3175	3.50174	14	3205	3.50583	15	3235	3.50987	14
3176	3.50188	14	3206	3.50596	14	3236	3.51001	13
3177	3.50202	13	3207	3.50610	13	3237	3.51014	14
3178	3.50215	14	3208	3.50623	14	3238	3.51028	15
3179	3.50229	14	3209	3.50637	14	3239	3.51041	14
3180	3.50243	14	3210	3.50651	14	3240	3.51055	14



Nomb	o. 54' 0"	D.	Nomb	o. 54' 30"	D.	Nomb	o. 55' 0"	D.
	Logarit.			Logarit.			Logarit.	
3240	3.51070	13	3270	3.51455	13	3300	3.51851	14
3241	3.51068	13	3271	3.51468	13	3301	3.51866	13
3242	3.51081	14	3272	3.51481	14	3302	3.51878	15
3243	3.51099	13	3273	3.51495	13	3303	3.51891	13
3244	3.51108	13	3274	3.51508	13	3304	3.51904	13
3245	3.51121	14	3275	3.51521	13	3305	3.51917	13
3246	3.51135	13	3276	3.51534	14	3306	3.51930	13
3247	3.51148	14	3277	3.51548	13	3307	3.51943	14
3248	3.51162	13	3278	3.51561	15	3308	3.51957	13
3249	3.51175	15	3279	3.51574	13	3309	3.51970	15
3250	3.51188	14	3280	3.51587	14	3310	3.51985	15
3251	3.51202	13	3281	3.51601	13	3311	3.51996	13
3252	3.51215	13	3282	3.51614	13	3312	3.52009	13
3253	3.51228	14	3283	3.51627	13	3313	3.52022	13
3254	3.51242	13	3284	3.51640	14	3314	3.52035	13
3255	3.51255	13	3285	3.51654	13	3315	3.52048	13
3256	3.51268	14	3286	3.51667	13	3316	3.52061	14
3257	3.51282	13	3287	3.51680	15	3317	3.52075	13
3258	3.51295	13	3288	3.51693	13	3318	3.52088	13
3259	3.51308	14	3289	3.51706	14	3319	3.52101	13
3260	3.51322	13	3290	3.51720	13	3320	3.52114	13
3261	3.51335	13	3291	3.51733	13	3321	3.52127	13
3262	3.51348	14	3292	3.51746	13	3322	3.52140	13
3263	3.51362	13	3293	3.51759	13	3323	3.52153	13
3264	3.51375	13	3294	3.51772	14	3324	3.52166	13
3265	3.51388	14	3295	3.51786	13	3325	3.52179	13
3266	3.51402	15	3296	3.51799	13	3326	3.52192	13
3267	3.51415	13	3297	3.51812	13	3327	3.52205	13
3268	3.51428	13	3298	3.51825	13	3328	3.52218	13
3269	3.51441	14	3299	3.51838	13	3329	3.52231	13
3270	3.51455	14	3300	3.51851	13	3330	3.52244	13

o 55'30"			o. 56' 0"			o. 56'30"		
Nomb	Logarit.	D.	Nomb	Logarit.	D.	Nomb.	Logarit.	D.
3330	3.52244	13	3360	3.52634	13	3390	3.53020	13
3331	3.52257	13	3361	3.52647	13	3391	3.53033	13
3332	3.52270	14	3362	3.52660	13	3392	3.53046	12
3333	3.52284	13	3363	3.52673	13	3393	3.53058	13
3334	3.52297	13	3364	3.52686	13	3394	3.53071	13
3335	3.52310	13	3365	3.52699	12	3395	3.53084	13
3336	3.52323	13	3366	3.52711	13	3396	3.53097	15
3337	3.52336	13	3367	3.52724	13	3397	3.53110	12
3338	3.52349	13	3368	3.52737	13	3398	3.53122	13
3339	3.52362	13	3369	3.52750	13	3399	3.53135	13
3340	3.52375	13	3370	3.52763	13	3400	3.53148	13
3341	3.52388	13	3371	3.52776	13	3401	3.53161	12
3342	3.52401	13	3372	3.52789	13	3402	3.53173	13
3343	3.52414	13	3373	3.52802	13	3403	3.53186	13
3344	3.52427	13	3374	3.52815	12	3404	3.53199	13
3345	3.52440	13	3375	3.52827	15	3405	3.53212	12
3346	3.52453	13	3376	3.52840	13	3406	3.53224	13
3347	3.52466	13	3377	3.52853	13	3407	3.53237	13
3348	3.52479	13	3378	3.52866	13	3408	3.53250	13
3349	3.52492	12	3379	3.52879	13	3409	3.53263	12
3350	3.52504	13	3380	3.52892	13	3410	3.53275	13
3351	3.52517	13	3381	3.52905	12	3411	3.53288	13
3352	3.52530	13	3382	3.52917	13	3412	3.53301	13
3353	3.52543	13	3383	3.52930	13	3413	3.53314	12
3354	3.52556	13	3384	3.52943	13	3414	3.53326	13
3355	3.52569	13	3385	3.52956	13	3415	3.53339	15
3356	3.52582	15	3386	3.52969	13	3416	3.53352	12
3357	3.52595	13	3387	3.52982	12	3417	3.53364	13
3358	3.52608	13	3388	3.52994	13	3418	3.53377	13
3359	3.52621	13	3389	3.53007	13	3419	3.53390	13
3360	3.52634		3390	3.53020	13	3420	3.53403	13

Nomb.	0.57'0"	D.	Nomb.	0.57'30"	D.	Nomb.	0.58'0"	D.
	Logarit.			Logarit.			Logarit.	
3420	3.55403		3450	3.55782	12	3480	3.54158	12
3421	3.55415	12	3451	3.55794	13	3481	3.54170	13
3422	3.55428	13	3452	3.55807	13	3482	3.54183	13
		15			15			12
3423	3.55441	12	3453	3.55820	12	3483	3.54195	13
3424	3.55453	13	3454	3.55832	13	3484	3.54208	12
3425	3.55466	13	3455	3.55845	12	3485	3.54220	13
		15			15			15
3426	3.55479	12	3456	3.55857	13	3486	3.54233	12
3427	3.55491	13	3457	3.55870	12	3487	3.54245	13
3428	3.55504	13	3458	3.55882	13	3488	3.54258	12
		15			15			12
3429	3.55517	12	3459	3.55895	13	3489	3.54270	13
3430	3.55529	13	3460	3.55908	12	3490	3.54283	12
3431	3.55542	13	3461	3.55920	13	3491	3.54295	13
		15			15			12
3432	3.55555	12	3462	3.55933	12	3492	3.54307	13
3433	3.55567	13	3463	3.55945	13	3493	3.54320	12
3434	3.55580	13	3464	3.55958	12	3494	3.54332	13
		15			12			15
3435	3.55593	12	3465	3.55970	13	3495	3.54345	12
3436	3.55605	13	3466	3.55983	12	3496	3.54357	13
3437	3.55618	13	3467	3.55995	13	3497	3.54370	12
		15			15			12
3438	3.55631	12	3468	3.56008	12	3498	3.54382	13
3439	3.55643	13	3469	3.56020	13	3499	3.54394	13
3440	3.55656	12	3470	3.56033	12	3500	3.54407	13
		15			12			12
3441	3.55668	13	3471	3.56045	13	3501	3.54419	13
3442	3.55681	13	3472	3.56058	12	3502	3.54432	12
3443	3.55694	12	3473	3.56070	13	3503	3.54444	12
		15			15			12
3444	3.55706	13	3474	3.56083	12	3504	3.54456	15
3445	3.55719	13	3475	3.56095	13	3505	3.54469	13
3446	3.55732	12	3476	3.56108	12	3506	3.54481	13
		15			12			15
3447	3.55744	13	3477	3.56120	13	3507	3.54494	12
3448	3.55757	12	3478	3.56133	12	3508	3.54506	12
3449	3.55769	13	3479	3.56145	13	3509	3.54518	13
3450	3.55782		3480	3.56158		3510	3.54531	



Nomb.	o. 58' 30"	D.	Nomb.	o. 59' 0"	D.	Nomb.	o 59' 50"	D.
	Logarit.			Logarit.			Logarit.	
3510	3.54551	12	3540	3.54900	13	3570	3.55267	12
3511	3.54543	12	3541	3.54913	12	3571	3.55279	12
3512	3.54555	13	3542	3.54925	12	3572	3.55291	12
3513	3.54568	12	3543	3.54937	12	3573	3.55303	12
3514	3.54580	13	3544	3.54949	13	3574	3.55315	13
3515	3.54593	12	3545	3.54962	12	3575	3.55328	12
3516	3.54605	12	3546	3.54974	12	3576	3.55340	12
3517	3.54617	13	3547	3.54986	12	3577	3.55352	12
3518	3.54630	12	3548	3.54998	13	3578	3.55364	12
3519	3.54642	12	3549	3.55011	12	3579	3.55376	12
3520	3.54654	13	3550	3.55023	12	3580	3.55388	12
3521	3.54667	12	3551	3.55035	12	3581	3.55400	13
3522	3.54679	12	3552	3.55047	13	3582	3.55413	12
3523	3.54691	13	3553	3.55060	12	3583	3.55425	12
3524	3.54704	12	3554	3.55072	12	3584	3.55437	12
3525	3.54716	12	3555	3.55084	12	3585	3.55449	12
3526	3.54728	13	3556	3.55096	12	3586	3.55461	12
3527	3.54741	12	3557	3.55108	13	3587	3.55473	12
3528	3.54753	12	3558	3.55121	12	3588	3.55485	12
3529	3.54765	12	3559	3.55133	12	3589	3.55497	12
3530	3.54777	13	3560	3.55145	12	3590	3.55509	13
3531	3.54790	12	3561	3.55157	12	3591	3.55522	12
3532	3.54802	12	3562	3.55169	13	3592	3.55534	12
3533	3.54814	13	3563	3.55182	12	3593	3.55546	12
3534	3.54827	12	3564	3.55194	12	3594	3.55558	12
3535	3.54839	12	3565	3.55206	12	3595	3.55570	12
3536	3.54851	13	3566	3.55218	12	3596	3.55582	12
3537	3.54864	12	3567	3.55230	12	3597	3.55594	12
3538	3.54876	12	3568	3.55242	13	3598	3.55606	12
3539	3.54888	12	3569	3.55255	12	3599	3.55618	12
3540	3.54900	12	3570	3.55267	12	3600	3.55630	12



Nomb.	1. 0' 0"	D.	Nomb.	1. 0' 30"	D.	Nomb.	1. 1' 0'	D.
	Logarit.			Logarit.			Logarit.	
3600	3.55630	12	3630	3.55991	12	3660	3.56348	12
3601	3.55642	12	3631	3.56003	12	3661	3.56360	12
3602	3.55654	12	3632	3.56015	12	3662	3.56372	12
3603	3.55666	12	3633	3.56027	12	3663	3.56384	12
3604	3.55678	13	3634	3.56038	11	3664	3.56396	12
3605	3.55691	12	3635	3.56050	12	3665	3.56407	11
3606	3.55703	12	3636	3.56062	12	3666	3.56419	12
3607	3.55715	12	3637	3.56074	12	3667	3.56431	12
3608	3.55727	12	3638	3.56086	12	3668	3.56443	12
3609	3.55739	12	3639	3.56098	12	3669	3.56455	12
3610	3.55751	12	3640	3.56110	12	3670	3.56467	11
3611	3.55763	12	3641	3.56122	12	3671	3.56478	12
3612	3.55775	12	3642	3.56134	12	3672	3.56490	12
3613	3.55787	12	3643	3.56146	12	3673	3.56502	12
3614	3.55799	12	3644	3.56158	12	3674	3.56514	12
3615	3.55811	12	3645	3.56170	12	3675	3.56526	12
3616	3.55823	12	3646	3.56182	12	3676	3.56538	11
3617	3.55835	12	3647	3.56194	11	3677	3.56549	12
3618	3.55847	12	3648	3.56205	12	3678	3.56561	12
3619	3.55859	12	3649	3.56217	12	3679	3.56573	12
3620	3.55871	12	3650	3.56229	12	3680	3.56585	12
3621	3.55883	12	3651	3.56241	12	3681	3.56597	11
3622	3.55895	12	3652	3.56253	12	3682	3.56608	12
3623	3.55907	12	3653	3.56265	12	3683	3.56620	12
3624	3.55919	12	3654	3.56277	12	3684	3.56632	12
3625	3.55931	12	3655	3.56289	12	3685	3.56644	12
3626	3.55943	12	3656	3.56301	11	3686	3.56656	11
3627	3.55955	12	3657	3.56312	12	3687	3.56667	12
3628	3.55967	12	3658	3.56324	12	3688	3.56679	12
3629	3.55979	12	3659	3.56336	12	3689	3.56691	12
3630	3.55991	12	3660	3.56348	12	3690	3.56703	12

Nomb.	1. 1' 30"	D.	Nomb.	1. 2' 0"	D.	Nomb.	1. 2' 30"	D.
	Logarit.			Logarit.			Logarit.	
3690	3.56703	11	3720	3.57054	12	3750	3.57403	12
3691	3.56714	12	3721	3.57066	12	3751	3.57415	11
3692	3.56726	12	3722	3.57078	11	3752	3.57426	12
3693	3.56738	12	3723	3.57089	12	3753	3.57438	11
3694	3.56750	11	3724	3.57101	12	3754	3.57449	12
3695	3.56761	12	3725	3.57113	11	3755	3.57461	12
3696	3.56773	12	3726	3.57124	12	3756	3.57473	11
3697	3.56785	12	3727	3.57136	12	3757	3.57484	12
3698	3.56797	11	3728	3.57148	11	3758	3.57496	11
3699	3.56808	12	3729	3.57159	12	3759	3.57507	12
3700	3.56820	12	3730	3.57171	12	3760	3.57519	11
3701	3.56832	12	3731	3.57183	11	3761	3.57530	12
3702	3.56844	11	3732	3.57194	12	3762	3.57542	11
3703	3.56855	12	3733	3.57206	11	3763	3.57553	12
3704	3.56867	12	3734	3.57217	12	3764	3.57565	11
3705	3.56879	12	3735	3.57229	12	3765	3.57576	12
3706	3.56891	11	3736	3.57241	11	3766	3.57588	12
3707	3.56902	12	3737	3.57252	12	3767	3.57600	11
3708	3.56914	12	3738	3.57264	12	3768	3.57611	12
3709	3.56926	11	3739	3.57276	11	3769	3.57623	11
3710	3.56937	12	3740	3.57287	12	3770	3.57634	12
3711	3.56949	12	3741	3.57299	11	3771	3.57646	11
3712	3.56961	11	3742	3.57310	12	3772	3.57657	12
3713	3.56972	12	3743	3.57322	12	3773	3.57669	11
3714	3.56984	12	3744	3.57334	11	3774	3.57680	12
3715	3.56996	12	3745	3.57345	12	3775	3.57692	11
3716	3.57008	11	3746	3.57357	11	3776	3.57703	12
3717	3.57019	12	3747	3.57368	12	3777	3.57715	11
3718	3.57031	12	3748	3.57380	12	3778	3.57726	12
3719	3.57043	11	3749	3.57392	11	3779	3.57738	11
3720	3.57054		3750	3.57403		3780	3.57749	

Nomb.	1. 3' 0"	D.	Nomb.	1. 3' 30"	D.	Nomb.	1. 4' 0"	D.
	Logarit.			Logarit.			Logarit.	
3780	3.57749	12	3810	3.58092	12	3840	3.58433	11
3781	3.57761	11	3811	3.58104	11	3841	3.58444	12
3782	3.57772	12	3812	3.58115	12	3842	3.58456	11
3783	3.57784	11	3813	3.58127	11	3843	3.58467	11
3784	3.57795	12	3814	3.58138	11	3844	3.58478	12
3785	3.57807	11	3815	3.58149	12	3845	3.58490	11
3786	3.57818	12	3816	3.58161	11	3846	3.58501	11
3787	3.57830	11	3817	3.58172	12	3847	3.58512	12
3788	3.57841	11	3818	3.58184	11	3848	3.58524	11
3789	3.57852	12	3819	3.58195	11	3849	3.58535	11
3790	3.57864	11	3820	3.58206	12	3850	3.58546	11
3791	3.57875	12	3821	3.58218	11	3851	3.58557	12
3792	3.57887	11	3822	3.58229	11	3852	3.58569	11
3793	3.57898	12	3823	3.58240	12	3853	3.58580	11
3794	3.57910	11	3824	3.58252	11	3854	3.58591	11
3795	3.57921	12	3825	3.58263	11	3855	3.58602	12
3796	3.57933	11	3826	3.58274	12	3856	3.58614	11
3797	3.57944	11	3827	3.58286	11	3857	3.58625	11
3798	3.57955	12	3828	3.58297	12	3858	3.58636	11
3799	3.57967	11	3829	3.58309	11	3859	3.58647	12
3800	3.57978	12	3830	3.58320	11	3860	3.58659	11
3801	3.57990	11	3831	3.58331	12	3861	3.58670	11
3802	3.58001	12	3832	3.58343	11	3862	3.58681	11
3803	3.58013	11	3833	3.58354	11	3863	3.58692	12
3804	3.58024	11	3834	3.58365	12	3864	3.58704	11
3805	3.58035	12	3835	3.58377	11	3865	3.58715	11
3806	3.58047	11	3836	3.58388	11	3866	3.58726	11
3807	3.58058	12	3837	3.58399	11	3867	3.58737	12
3808	3.58070	11	3838	3.58410	12	3868	3.58749	11
3809	3.58081	11	3839	3.58422	11	3869	3.58760	11
3810	3.58092	11	3840	3.58433	11	3870	3.58771	11



Nomb.	r. 4' 30"	D.	Nomb.	r. 5' 0"	D.	Nomb.	r. 5' 30"	D.
	Logarit.			Logarit.			Logarit.	
3870	3.58771		3900	3.59106		3930	3.59430	
3871	3.58782	11	3901	3.59118	12	3931	3.59450	11
3872	3.58794	12	3902	3.59129	11	3932	3.59461	11
		11			11			11
3873	3.58805	11	3903	3.59140	11	3933	3.59472	11
3874	3.58816	11	3904	3.59151	11	3934	3.59483	11
3875	3.58827	11	3905	3.59162	11	3935	3.59494	12
		11			11			11
3876	3.58838	12	3906	3.59173	11	3936	3.59506	11
3877	3.58850	11	3907	3.59184	11	3937	3.59517	11
3878	3.58861	11	3908	3.59195	12	3938	3.59528	11
		11			12			11
3879	3.58872	11	3909	3.59207	11	3939	3.59539	11
3880	3.58883	11	3910	3.59218	11	3940	3.59550	11
3881	3.58894	11	3911	3.59229	11	3941	3.59561	11
		12			11			11
3882	3.58906	11	3912	3.59240	11	3942	3.59572	11
3883	3.58917	11	3913	3.59251	11	3943	3.59583	11
3884	3.58928	11	3914	3.59262	11	3944	3.59594	11
		11			11			11
3885	3.58939	11	3915	3.59273	11	3945	3.59605	11
3886	3.58950	11	3916	3.59284	11	3946	3.59616	11
3887	3.58961	11	3917	3.59295	11	3947	3.59627	11
		12			11			11
3888	3.58973	11	3918	3.59306	12	3948	3.59638	11
3889	3.58984	11	3919	3.59318	11	3949	3.59649	11
3890	3.58995	11	3920	3.59329	11	3950	3.59660	11
		11			11			11
3891	3.59006	11	3921	3.59340	11	3951	3.59671	11
3892	3.59017	11	3922	3.59351	11	3952	3.59682	11
3893	3.59028	11	3923	3.59362	11	3953	3.59693	11
		12			11			11
3894	3.59040	11	3924	3.59373	11	3954	3.59704	11
3895	3.59051	11	3925	3.59384	11	3955	3.59715	11
3896	3.59062	11	3926	3.59395	11	3956	3.59726	11
		11			11			11
3897	3.59073	11	3927	3.59406	11	3957	3.59737	11
3898	3.59084	11	3928	3.59417	11	3958	3.59748	11
3899	3.59095	11	3929	3.59428	11	3959	3.59759	11
3900	3.59106	11	3930	3.59439	11	3960	3.59770	11



Nom.	1. 6' 4"	D.	Nomb.	1. 6' 30"	D.	Nomb.	1. 7' 0"	D.
	Logarit.			Logarit.			Logarit.	
3960	3.59770	10	3990	3.60097	11	4020	3.60423	10
3961	3.59780	11	3991	3.60108	11	4021	3.60433	11
3962	3.59791	11	3992	3.60119	11	4022	3.60444	11
3963	3.59802	11	3993	3.60130	11	4023	3.60455	11
3964	3.59813	11	3994	3.60141	11	4024	3.60466	11
3965	3.59824	11	3995	3.60152	11	4025	3.60477	10
3966	3.59835	11	3996	3.60163	10	4026	3.60487	11
3967	3.59846	11	3997	3.60175	11	4027	3.60498	11
3968	3.59857	11	3998	3.60184	11	4028	3.60509	11
3969	3.59868	11	3999	3.60195	11	4029	3.60520	11
3970	3.59879	11	4000	3.60206	11	4030	3.60531	11
3971	3.59890	11	4001	3.60217	11	4031	3.60541	10
3972	3.59901	11	4002	3.60228	11	4032	3.60552	11
3973	3.59912	11	4003	3.60239	10	4033	3.60563	11
3974	3.59923	11	4004	3.60249	11	4034	3.60574	10
3975	3.59934	11	4005	3.60260	11	4035	3.60584	11
3976	3.59945	11	4006	3.60271	11	4036	3.60595	11
3977	3.59956	10	4007	3.60282	11	4037	3.60606	11
3978	3.59966	11	4008	3.60293	11	4038	3.60617	10
3979	3.59977	11	4009	3.60304	10	4039	3.60627	11
3980	3.59988	11	4010	3.60314	11	4040	3.60638	11
3981	3.59999	11	4011	3.60325	11	4041	3.60649	11
3982	3.60010	11	4012	3.60336	11	4042	3.60660	10
3983	3.60021	11	4013	3.60347	11	4043	3.60670	11
3984	3.60032	11	4014	3.60358	11	4044	3.60681	11
3985	3.60043	11	4015	3.60369	10	4045	3.60692	11
3986	3.60054	11	4016	3.60379	11	4046	3.60703	10
3987	3.60065	11	4017	3.60390	11	4047	3.60713	11
3988	3.60076	10	4018	3.60401	11	4048	3.60724	11
3989	3.60086	11	4019	3.60412	11	4049	3.60735	11
3990	3.60097		4020	3.60423		4050	3.60746	11

Nomb.	1. 7' 30"	D.	Nomb.	1. 8' 0"	D.	Nomb.	1. 8' 30"	D.
	Logarit.			Logarit.			Logarit.	
4050	3.60746	10	4080	3.61066	11	4110	3.61384	11
4051	3.60756	11	4081	3.61077	10	4111	3.61395	10
4052	3.60767	11	4082	3.61087	11	4112	3.61405	11
4053	3.60778	10	4083	3.61098	11	4113	3.61416	10
4054	3.60788	11	4084	3.61109	10	4114	3.61426	11
4055	3.60799	11	4085	3.61119	11	4115	3.61437	11
4056	3.60810	11	4086	3.61130	10	4116	3.61448	10
4057	3.60821	10	4087	3.61140	11	4117	3.61458	11
4058	3.60831	11	4088	3.61151	11	4118	3.61469	10
4059	3.60842	11	4089	3.61162	10	4119	3.61479	11
4060	3.60853	10	4090	3.61172	11	4120	3.61490	10
4061	3.60863	11	4091	3.61183	11	4121	3.61500	11
4062	3.60874	11	4092	3.61194	10	4122	3.61511	10
4063	3.60885	10	4093	3.61204	11	4123	3.61521	11
4064	3.60895	11	4094	3.61215	10	4124	3.61532	10
4065	3.60906	11	4095	3.61225	11	4125	3.61542	11
4066	3.60917	10	4096	3.61236	11	4126	3.61553	10
4067	3.60927	11	4097	3.61247	10	4127	3.61563	11
4068	3.60938	11	4098	3.61257	11	4128	3.61574	10
4069	3.60949	10	4099	3.61268	10	4129	3.61584	11
4070	3.60959	11	4100	3.61278	11	4130	3.61595	11
4071	3.60970	11	4101	3.61289	11	4131	3.61606	10
4072	3.60981	10	4102	3.61300	10	4132	3.61616	11
4073	3.60991	11	4103	3.61310	11	4133	3.61627	10
4074	3.61002	11	4104	3.61321	10	4134	3.61637	11
4075	3.61013	10	4105	3.61331	11	4135	3.61648	10
4076	3.61023	11	4106	3.61342	10	4136	3.61658	11
4077	3.61034	11	4107	3.61352	11	4137	3.61669	10
4078	3.61045	10	4108	3.61363	11	4138	3.61679	11
4079	3.61055	11	4109	3.61374	10	4139	3.61690	10
4080	3.61066	11	4110	3.61384	10	4140	3.61700	10

Nomb.	1. 9' 0"	D.	Nomb.	1. 9' 30"	D.	Nomb.	1. 10' 0"	D.
	Logarit.			Logarit.			Logarit.	
4140	3.61700	11	4170	3.62014	10	4200	3.62325	10
4141	3.61711	10	4171	3.62024	10	4201	3.62335	11
4142	3.61721	10	4172	3.62034	11	4202	3.62346	10
4143	3.61731	11	4173	3.62045	10	4203	3.62356	10
4144	3.61742	10	4174	3.62055	11	4204	3.62366	11
4145	3.61752	11	4175	3.62066	10	4205	3.62377	10
4146	3.61763	10	4176	3.62076	10	4206	3.62387	10
4147	3.61773	11	4177	3.62086	11	4207	3.62397	11
4148	3.61784	10	4178	3.62097	10	4208	3.62408	10
4149	3.61794	11	4179	3.62107	11	4209	3.62418	10
4150	3.61805	10	4180	3.62118	10	4210	3.62428	11
4151	3.61815	11	4181	3.62128	10	4211	3.62439	10
4152	3.61826	10	4182	3.62138	11	4212	3.62449	10
4153	3.61836	11	4183	3.62149	10	4213	3.62459	10
4154	3.61847	10	4184	3.62159	11	4214	3.62469	11
4155	3.61857	11	4185	3.62170	10	4215	3.62480	10
4156	3.61868	10	4186	3.62180	10	4216	3.62490	10
4157	3.61878	10	4187	3.62190	11	4217	3.62500	11
4158	3.61888	11	4188	3.62201	10	4218	3.62511	10
4159	3.61899	10	4189	3.62211	10	4219	3.62521	10
4160	3.61909	11	4190	3.62221	11	4220	3.62531	11
4161	3.61920	10	4191	3.62232	10	4221	3.62542	10
4162	3.61930	11	4192	3.62242	10	4222	3.62552	10
4163	3.61941	10	4193	3.62252	11	4223	3.62562	10
4164	3.61951	11	4194	3.62263	10	4224	3.62572	11
4165	3.61962	10	4195	3.62273	11	4225	3.62583	10
4166	3.61972	10	4196	3.62284	10	4226	3.62593	10
4167	3.61982	11	4197	3.62294	10	4227	3.62603	10
4168	3.61993	10	4198	3.62304	11	4228	3.62613	11
4169	3.62003	11	4199	3.62315	10	4229	3.62624	10
4170	3.62014		4200	3.62325	10	4230	3.62634	



Nomb.	1.10'30"	D.	Nomb.	1.11'0"	D.	Nomb.	1.11'30"	D.
	Logarit.			Logarit.			Logarit.	
4230	3.62634	10	4260	3.62941	10	4290	3.63246	10
4231	3.62644	11	4261	3.62951	10	4291	3.63256	10
4232	3.62655	10	4262	3.62961	11	4292	3.63266	10
4233	3.62665	10	4263	3.62972	10	4293	3.63276	10
4234	3.62675	10	4264	3.62982	10	4294	3.63286	10
4235	3.62685	11	4265	3.62992	10	4295	3.63296	10
4236	3.62696	10	4266	3.63002	10	4296	3.63306	11
4237	3.62706	10	4267	3.63012	10	4297	3.63317	10
4238	3.62716	10	4268	3.63022	11	4298	3.63327	10
4239	3.62726	11	4269	3.63033	10	4299	3.63337	10
4240	3.62737	10	4270	3.63043	10	4300	3.63347	10
4241	3.62747	10	4271	3.63053	10	4301	3.63357	10
4242	3.62757	10	4272	3.63063	10	4302	3.63367	10
4243	3.62767	11	4273	3.63073	10	4303	3.63377	10
4244	3.62778	10	4274	3.63083	11	4304	3.63387	10
4245	3.62788	10	4275	3.63094	10	4305	3.63397	10
4246	3.62798	10	4276	3.63104	10	4306	3.63407	10
4247	3.62808	10	4277	3.63114	10	4307	3.63417	11
4248	3.62818	11	4278	3.63124	10	4308	3.63428	10
4249	3.62829	10	4279	3.63134	10	4309	3.63438	10
4250	3.62839	10	4280	3.63144	11	4310	3.63448	10
4251	3.62849	10	4281	3.63155	10	4311	3.63458	10
4252	3.62859	11	4282	3.63165	10	4312	3.63468	10
4253	3.62870	10	4283	3.63175	10	4313	3.63478	10
4254	3.62880	10	4284	3.63185	10	4314	3.63488	10
4255	3.62890	10	4285	3.63195	10	4315	3.63498	10
4256	3.62900	10	4286	3.63205	10	4316	3.63508	10
4257	3.62910	11	4287	3.63215	10	4317	3.63518	10
4258	3.62921	10	4288	3.63225	11	4318	3.63528	10
4259	3.62931	10	4289	3.63236	10	4319	3.63538	10
4260	3.62941	10	4290	3.63246	10	4320	3.63548	10



Nomb	i. 12' 0"	D.	Nomb	i. 12' 30"	D.	Nomb	i. 13' 0"	D.
	Logarit.			Logarit.			Logarit.	
4320	3.63548	10	4350	3.63849	10	4380	3.64147	10
4321	3.63558	10	4351	3.63859	10	4381	3.64157	10
4322	3.63568		4352	3.63869	10	4382	3.64167	10
		11						10
4323	3.63579	10	4353	3.63879	10	4383	3.64177	10
4324	3.63589	10	4354	3.63889	10	4384	3.64187	10
4325	3.63599	10	4355	3.63899	10	4385	3.64197	10
		10						10
4326	3.63609	10	4356	3.63909	10	4386	3.64207	10
4327	3.63619	10	4357	3.63919	10	4387	3.64217	10
4328	3.63629	10	4358	3.63929	10	4388	3.64227	10
		10						10
4329	3.63639	10	4359	3.63939	10	4389	3.64237	9
4330	3.63649	10	4360	3.63949	10	4390	3.64246	10
4331	3.63659	10	4361	3.63959	10	4391	3.64256	10
		10						10
4332	3.63669	10	4362	3.63969	10	4392	3.64266	10
4333	3.63679	10	4363	3.63979	9	4393	3.64276	10
4334	3.63689	10	4364	3.63988	10	4394	3.64286	10
		10						10
4335	3.63699	10	4365	3.63998	10	4395	3.64296	10
4336	3.63709	10	4366	3.64008	10	4396	3.64306	10
4337	3.63719	10	4367	3.64018	10	4397	3.64316	10
		10						10
4338	3.63729	10	4368	3.64028	10	4398	3.64326	9
4339	3.63739	10	4369	3.64038	10	4399	3.64336	10
4340	3.63749	10	4370	3.64048	10	4400	3.64345	10
		10						10
4341	3.63759	10	4371	3.64058	10	4401	3.64355	10
4342	3.63769	10	4372	3.64068	10	4402	3.64365	10
4343	3.63779	10	4373	3.64078	10	4403	3.64375	10
		10						10
4344	3.63789	10	4374	3.64088	10	4404	3.64385	10
4345	3.63799	10	4375	3.64098	10	4405	3.64395	10
4346	3.63809	10	4376	3.64108	10	4406	3.64404	9
		10						10
4347	3.63819	10	4377	3.64118	10	4407	3.64414	10
4348	3.63829	10	4378	3.64128	10	4408	3.64424	10
4349	3.63839	10	4379	3.64137	9	4409	3.64434	10
4350	3.63849	10	4380	3.64147	10	4410	3.64444	10

Nomb.	1.13'50"	D.	Nomb.	1.14'0"	D.	Nomb.	1.14'30"	D.
	Logarit			Logarit			Logarit	
4410	3.64444	10	4440	3.64758	10	4470	3.65051	9
4411	3.64454	10	4441	3.64748	10	4471	3.65040	10
4412	3.64464	9	4442	3.64758	10	4472	3.65050	10
4413	3.64473	10	4443	3.64768	9	4473	3.65060	10
4414	3.64483	10	4444	3.64777	10	4474	3.65070	9
4415	3.64493	10	4445	3.64787	10	4475	3.65079	10
4416	3.64503	10	4446	3.64797	10	4476	3.65089	10
4417	3.64513	10	4447	3.64807	9	4477	3.65099	9
4418	3.64523	9	4448	3.64816	10	4478	3.65108	10
4419	3.64532	10	4449	3.64826	10	4479	3.65118	10
4420	3.64542	10	4450	3.64836	10	4480	3.65128	9
4421	3.64552	10	4451	3.64846	10	4481	3.65137	10
4422	3.64562	10	4452	3.64856	9	4482	3.65147	10
4423	3.64572	10	4453	3.64865	10	4483	3.65157	10
4424	3.64582	9	4454	3.64875	10	4484	3.65167	9
4425	3.64591	10	4455	3.64885	10	4485	3.65176	10
4426	3.64601	10	4456	3.64895	9	4486	3.65186	10
4427	3.64611	10	4457	3.64904	10	4487	3.65196	9
4428	3.64621	10	4458	3.64914	10	4488	3.65205	10
4429	3.64631	9	4459	3.64924	9	4489	3.65215	10
4430	3.64640	10	4460	3.64933	10	4490	3.65225	9
4431	3.64650	10	4461	3.64943	10	4491	3.65234	10
4432	3.64660	10	4462	3.64953	10	4492	3.65244	10
4433	3.64670	10	4463	3.64963	9	4493	3.65254	9
4434	3.64680	9	4464	3.64972	10	4494	3.65263	10
4435	3.64689	10	4465	3.64982	10	4495	3.65273	10
4436	3.64699	10	4466	3.64992	10	4496	3.65283	9
4437	3.64709	10	4467	3.65002	9	4497	3.65292	10
4438	3.64719	10	4468	3.65011	10	4498	3.65302	10
4439	3.64729	9	4469	3.65021	10	4499	3.65312	10
4440	3.64738		4470	3.65031	10	4500	3.65321	9

Nomb	r. 15' 0"	D.	Nomb.	r. 15' 30"	D.	Nomb	r. 16' 0"	D.
	Logarit.			Logarit.			Logarit.	
4500	3.65321	10	4530	3.65610	9	4560	3.65896	10
4501	3.65331	10	4531	3.65619	10	4561	3.65906	10
4502	3.65341	9	4532	3.65629	10	4562	3.65916	9
4503	3.65350	10	4533	3.65639	9	4563	3.65925	10
4504	3.65360	9	4534	3.65648	10	4564	3.65935	9
4505	3.65369	10	4535	3.65658	9	4565	3.65944	10
4506	3.65379	10	4536	3.65667	10	4566	3.65954	9
4507	3.65389	9	4537	3.65677	9	4567	3.65963	10
4508	3.65398	10	4538	3.65686	10	4568	3.65973	9
4509	3.65408	10	4539	3.65696	10	4569	3.65982	10
4510	3.65418	9	4540	3.65706	9	4570	3.65992	9
4511	3.65427	10	4541	3.65715	10	4571	3.66001	10
4512	3.65437	10	4542	3.65725	9	4572	3.66011	9
4513	3.65447	9	4543	3.65734	10	4573	3.66020	10
4514	3.65456	10	4544	3.65744	9	4574	3.66030	9
4515	3.65466	9	4545	3.65753	10	4575	3.66039	10
4516	3.65475	10	4546	3.65763	9	4576	3.66049	9
4517	3.65485	10	4547	3.65772	10	4577	3.66058	10
4518	3.65495	9	4548	3.65782	10	4578	3.66068	9
4519	3.65504	10	4549	3.65792	9	4579	3.66077	10
4520	3.65514	9	4550	3.65801	10	4580	3.66087	9
4521	3.65523	10	4551	3.65811	9	4581	3.66096	10
4522	3.65533	10	4552	3.65820	10	4582	3.66106	9
4523	3.65543	9	4553	3.65830	9	4583	3.66115	10
4524	3.65552	10	4554	3.65839	10	4584	3.66124	9
4525	3.65562	9	4555	3.65849	9	4585	3.66134	10
4526	3.65571	10	4556	3.65858	10	4586	3.66143	9
4527	3.65581	10	4557	3.65868	9	4587	3.66153	10
4528	3.65591	9	4558	3.65877	10	4588	3.66162	9
4529	3.65600	10	4559	3.65887	9	4589	3.66172	10
4530	3.65610		4560	3.65896	9	4590	3.66181	9



Nomb.	1.16'30"	D.	Nomb.	1.17'0"	D.	Nomb.	1.17'30"	D.
	Logarit.			Logarit.			Logarit.	
4590	3.66181	10	4620	3.66464	10	4650	3.66745	10
4591	3.66191	9	4621	3.66474	9	4651	3.66755	9
4592	3.66200	10	4622	3.66483	9	4652	3.66764	9
4593	3.66210	9	4623	3.66492	9	4653	3.66773	9
4594	3.66219	10	4624	3.66502	10	4654	3.66783	10
4595	3.66229	9	4625	3.66511	9	4655	3.66792	9
4596	3.66238	9	4626	3.66521	10	4656	3.66801	9
4597	3.66247	10	4627	3.66530	9	4657	3.66811	10
4598	3.66257	9	4628	3.66539	9	4658	3.66820	9
4599	3.66266	10	4629	3.66549	10	4659	3.66829	9
4600	3.66276	9	4630	3.66558	9	4660	3.66839	10
4601	3.66285	10	4631	3.66567	9	4661	3.66848	9
4602	3.66295	9	4632	3.66577	10	4662	3.66857	9
4603	3.66304	10	4633	3.66586	9	4663	3.66867	10
4604	3.66314	9	4634	3.66596	10	4664	3.66876	9
4605	3.66323	9	4635	3.66605	9	4665	3.66885	9
4606	3.66332	10	4636	3.66614	9	4666	3.66894	9
4607	3.66342	9	4637	3.66624	10	4667	3.66904	10
4608	3.66351	10	4638	3.66633	9	4668	3.66913	9
4609	3.66361	9	4639	3.66642	9	4669	3.66922	9
4610	3.66370	10	4640	3.66652	10	4670	3.66932	10
4611	3.66380	9	4641	3.66661	9	4671	3.66941	9
4612	3.66389	9	4642	3.66671	10	4672	3.66950	9
4613	3.66398	10	4643	3.66680	9	4673	3.66960	10
4614	3.66408	9	4644	3.66689	9	4674	3.66969	9
4615	3.66417	10	4645	3.66699	10	4675	3.66978	9
4616	3.66427	9	4646	3.66708	9	4676	3.66987	9
4617	3.66436	9	4647	3.66717	9	4677	3.66997	10
4618	3.66445	10	4648	3.66727	10	4678	3.67006	9
4619	3.66455	9	4649	3.66736	9	4679	3.67015	9
4620	3.66464	9	4650	3.66745	9	4680	3.67025	10



Nomb.	1. 18' 0"	D.	Nomb.	1. 18' 30"	D.	Nomb.	1. 19' 0"	D.
	Logarit.			Logarit.			Logarit.	
4680	3.67025	9	4710	3.67302	9	4740	3.67578	9
4681	3.67034	9	4711	3.67311	10	4741	3.67587	9
4682	3.67043	9	4712	3.67321	9	4742	3.67596	9
4683	3.67052	10	4713	3.67330	9	4743	3.67605	9
4684	3.67062	9	4714	3.67339	9	4744	3.67614	10
4685	3.67071	9	4715	3.67348	9	4745	3.67624	9
4686	3.67080	9	4716	3.67357	10	4746	3.67633	9
4687	3.67089	10	4717	3.67367	9	4747	3.67642	9
4688	3.67099	9	4718	3.67376	9	4748	3.67651	9
4689	3.67108	9	4719	3.67385	9	4749	3.67660	9
4690	3.67117	10	4720	3.67394	9	4750	3.67669	9
4691	3.67127	9	4721	3.67403	10	4751	3.67679	10
4692	3.67136	9	4722	3.67413	9	4752	3.67688	9
4693	3.67145	9	4723	3.67422	9	4753	3.67697	9
4694	3.67154	10	4724	3.67431	9	4754	3.67706	9
4695	3.67164	9	4725	3.67440	9	4755	3.67715	9
4696	3.67173	9	4726	3.67449	10	4756	3.67724	9
4697	3.67182	9	4727	3.67459	9	4757	3.67733	9
4698	3.67191	10	4728	3.67468	9	4758	3.67742	10
4699	3.67201	9	4729	3.67477	9	4759	3.67752	9
4700	3.67210	9	4730	3.67486	9	4760	3.67761	9
4701	3.67219	9	4731	3.67495	9	4761	3.67770	9
4702	3.67228	9	4732	3.67504	10	4762	3.67779	9
4703	3.67237	10	4733	3.67514	9	4763	3.67788	9
4704	3.67247	9	4734	3.67523	9	4764	3.67797	9
4705	3.67256	9	4735	3.67532	9	4765	3.67806	9
4706	3.67265	9	4736	3.67541	9	4766	3.67815	9
4707	3.67274	10	4737	3.67550	9	4767	3.67825	10
4708	3.67284	9	4738	3.67560	10	4768	3.67834	9
4709	3.67293	9	4739	3.67569	9	4769	3.67843	9
4710	3.67302	9	4740	3.67578	9	4770	3.67852	9

Nomb.	1. 19' 30"	D.	Nomb.	1. 20' 0"	D.	Nomb.	1. 20' 30"	D.
	Logarit.			Logarit.			Logarit.	
4770	3.67852	9	4800	3.68124	9	4830	3.68395	9
4771	3.67861	9	4801	3.68133	9	4831	3.68404	9
4772	3.67870	9	4802	3.68142	9	4832	3.68415	9
4773	3.67879	9	4803	3.68151	9	4833	3.68422	9
4774	3.67888	9	4804	3.68160	9	4834	3.68431	9
4775	3.67897	9	4805	3.68169	9	4835	3.68440	9
4776	3.67906	10	4806	3.68178	9	4836	3.68449	9
4777	3.67916	9	4807	3.68187	9	4837	3.68458	9
4778	3.67925	9	4808	3.68196	9	4838	3.68467	9
4779	3.67934	9	4809	3.68205	10	4839	3.68476	9
4780	3.67943	9	4810	3.68215	9	4840	3.68485	9
4781	3.67952	9	4811	3.68224	9	4841	3.68494	8
4782	3.67961	9	4812	3.68233	9	4842	3.68502	9
4783	3.67970	9	4813	3.68242	9	4843	3.68511	9
4784	3.67979	9	4814	3.68251	9	4844	3.68520	9
4785	3.67988	9	4815	3.68260	9	4845	3.68529	9
4786	3.67997	9	4816	3.68269	9	4846	3.68538	9
4787	3.68006	9	4817	3.68278	9	4847	3.68547	9
4788	3.68015	9	4818	3.68287	9	4848	3.68556	9
4789	3.68024	10	4819	3.68296	9	4849	3.68565	9
4790	3.68034	9	4820	3.68305	9	4850	3.68574	9
4791	3.68043	9	4821	3.68314	9	4851	3.68583	9
4792	3.68052	9	4822	3.68323	9	4852	3.68592	9
4793	3.68061	9	4823	3.68332	9	4853	3.68601	9
4794	3.68070	9	4824	3.68341	9	4854	3.68610	9
4795	3.68079	9	4825	3.68350	9	4855	3.68619	9
4796	3.68088	9	4826	3.68359	9	4856	3.68628	9
4797	3.68097	9	4827	3.68368	9	4857	3.68637	9
4798	3.68106	9	4828	3.68377	9	4858	3.68646	9
4799	3.68115	9	4829	3.68386	9	4859	3.68655	9
4800	3.68124	9	4830	3.68395	9	4860	3.68664	9

Nomb.	1. 21' 0"	D.	Nomb.	1. 21' 30"	D.	Nomb.	1. 22' 0"	D.
	Logarit.			Logarit.			Logarit.	
4860	3.68664		4890	3.68931		4920	3.69197	8
4861	3.68673	9	4891	3.68940	9	4921	3.69205	9
4862	3.68681	8	4892	3.68949	9	4922	3.69214	9
		9			9			9
4863	3.68690	9	4893	3.68958	8	4923	3.69223	9
4864	3.68699	9	4894	3.68966	9	4924	3.69232	9
4865	3.68708	9	4895	3.68975	9	4925	3.69241	8
		9			9			9
4866	3.68717	9	4896	3.68984	9	4926	3.69249	9
4867	3.68726	9	4897	3.68993	9	4927	3.69258	9
4868	3.68735	9	4898	3.69002	9	4928	3.69267	9
		9			9			9
4869	3.68744	9	4899	3.69011	9	4929	3.69276	9
4870	3.68753	9	4900	3.69020	8	4930	3.69285	9
4871	3.68762	9	4901	3.69028	9	4931	3.69294	8
		9			9			9
4872	3.68771	9	4902	3.69037	9	4932	3.69302	9
4873	3.68780	9	4903	3.69046	9	4933	3.69311	9
4874	3.68789	8	4904	3.69055	9	4934	3.69320	9
		9			9			9
4875	3.68797	9	4905	3.69064	9	4935	3.69329	9
4876	3.68806	9	4906	3.69073	9	4936	3.69338	8
4877	3.68815	9	4907	3.69082	8	4937	3.69346	9
		9			9			9
4878	3.68824	9	4908	3.69090	9	4938	3.69355	9
4879	3.68833	9	4909	3.69099	9	4939	3.69364	9
4880	3.68842	9	4910	3.69108	9	4940	3.69373	8
		9			9			9
4881	3.68851	9	4911	3.69117	9	4941	3.69381	9
4882	3.68860	9	4912	3.69126	9	4942	3.69390	9
4883	3.68869	9	4913	3.69135	9	4943	3.69399	9
		9			9			9
4884	3.68878	8	4914	3.69144	8	4944	3.69408	9
4885	3.68886	9	4915	3.69152	9	4945	3.69417	8
4886	3.68895	9	4916	3.69161	9	4946	3.69425	9
		9			9			9
4887	3.68904	9	4917	3.69170	9	4947	3.69434	9
4888	3.68913	9	4918	3.69179	9	4948	3.69443	9
4889	3.68922	9	4919	3.69188	9	4949	3.69452	9
4890	3.68931	9	4920	3.69197	9	4950	3.69461	9



Nomb.	1.22'30"	D.	Nomb.	1.23'0"	D.	Nomb.	1.23'30"	D.
	Logarit.			Logarit.			Logarit.	
4950	3.69461	8	4980	3.69723	9	5010	3.69984	8
4951	3.69469	9	4981	3.69732	8	5011	3.69992	9
4952	3.69478	9	4982	3.69740	9	5012	3.70001	9
4953	3.69487	9	4983	3.69749	9	5013	3.70010	8
4954	3.69496	8	4984	3.69758	9	5014	3.70018	9
4955	3.69504	9	4985	3.69767	8	5015	3.70027	9
4956	3.69513	9	4986	3.69775	9	5016	3.70036	8
4957	3.69522	9	4987	3.69784	9	5017	3.70044	9
4958	3.69531	8	4988	3.69795	8	5018	3.70053	9
4959	3.69539	9	4989	3.69801	9	5019	3.70062	8
4960	3.69548	9	4990	3.69810	9	5020	3.70070	9
4961	3.69557	9	4991	3.69819	8	5021	3.70079	9
4962	3.69566	8	4992	3.69827	9	5022	3.70088	8
4963	3.69574	9	4993	3.69836	9	5023	3.70096	9
4964	3.69583	9	4994	3.69845	9	5024	3.70105	9
4965	3.69592	9	4995	3.69854	8	5025	3.70114	8
4966	3.69601	8	4996	3.69862	9	5026	3.70122	9
4967	3.69609	9	4997	3.69871	9	5027	3.70131	9
4968	3.69618	9	4998	3.69880	8	5028	3.70140	8
4969	3.69627	9	4999	3.69888	9	5029	3.70148	9
4970	3.69636	8	5000	3.69897	9	5030	3.70157	8
4971	3.69644	9	5001	3.69906	8	5031	3.70165	9
4972	3.69653	9	5002	3.69914	9	5032	3.70174	9
4973	3.69662	9	5003	3.69923	9	5033	3.70183	8
4974	3.69671	8	5004	3.69932	8	5034	3.70191	9
4975	3.69679	9	5005	3.69940	9	5035	3.70200	9
4976	3.69688	9	5006	3.69949	9	5036	3.70209	8
4977	3.69697	8	5007	3.69958	8	5037	3.70217	9
4978	3.69705	9	5008	3.69966	9	5038	3.70226	8
4979	3.69714	9	5009	3.69975	9	5039	3.70234	9
4980	3.69723	9	5010	3.69984	9	5040	3.70243	9



Nomb.	1.24'0	D.	Nomb.	1.24'30"	D.	Nomb.	1.25'0"	D.
	Logarit.			Logarit.			Logarit.	
5040	3.70243	9	5070	3.70501	8	5100	3.70757	9
5041	3.70252	8	5071	3.70509	9	5101	3.70766	8
5042	3.70260	9	5072	3.70518	8	5102	3.70774	9
5043	3.70269	8	5073	3.70526	9	5103	3.70783	8
5044	3.70278	9	5074	3.70535	8	5104	3.70791	9
5045	3.70286	8	5075	3.70544	9	5105	3.70800	8
5046	3.70295	9	5076	3.70552	8	5106	3.70808	9
5047	3.70303	8	5077	3.70561	9	5107	3.70817	8
5048	3.70312	9	5078	3.70569	8	5108	3.70825	9
5049	3.70321	8	5079	3.70578	9	5109	3.70834	8
5050	3.70329	9	5080	3.70586	8	5110	3.70842	9
5051	3.70338	8	5081	3.70595	9	5111	3.70851	8
5052	3.70346	9	5082	3.70603	8	5112	3.70859	9
5053	3.70355	8	5083	3.70612	9	5113	3.70868	8
5054	3.70364	9	5084	3.70621	8	5114	3.70876	9
5055	3.70372	8	5085	3.70629	9	5115	3.70885	8
5056	3.70381	9	5086	3.70638	8	5116	3.70893	9
5057	3.70389	8	5087	3.70646	9	5117	3.70902	8
5058	3.70398	9	5088	3.70655	8	5118	3.70910	9
5059	3.70406	8	5089	3.70663	9	5119	3.70919	8
5060	3.70415	9	5090	3.70672	8	5120	3.70927	9
5061	3.70424	8	5091	3.70680	9	5121	3.70935	8
5062	3.70432	9	5092	3.70689	8	5122	3.70944	9
5063	3.70441	8	5093	3.70697	9	5123	3.70952	8
5064	3.70449	9	5094	3.70706	8	5124	3.70961	9
5065	3.70458	8	5095	3.70714	9	5125	3.70969	8
5066	3.70467	9	5096	3.70723	8	5126	3.70978	9
5067	3.70475	8	5097	3.70731	9	5127	3.70986	8
5068	3.70484	9	5098	3.70740	8	5128	3.70995	9
5069	3.70492	8	5099	3.70749	9	5129	3.71003	8
5070	3.70501	9	5100	3.70757	8	5130	3.71012	9

Nomb	1.25'30"	D.	Nomb	1.26' 0'	D.	Nomb	1.26'30"	D.
	Logarit.			Logarit.			Logarit.	
5130	3.71012	8	5160	3.71265	8	5190	3.71517	8
5131	3.71020	9	5161	3.71275	8	5191	3.71525	8
5132	3.71029	8	5162	3.71282	9	5192	3.71533	8
					8			9
5133	3.71037	9	5163	3.71290	9	5193	3.71542	8
5134	3.71046	8	5164	3.71299	8	5194	3.71550	9
5135	3.71054	9	5165	3.71307	8	5195	3.71559	8
					8			8
5136	3.71063	8	5166	3.71315	9	5196	3.71567	8
5137	3.71071	8	5167	3.71324	8	5197	3.71575	9
5138	3.71079	9	5168	3.71332	9	5198	3.71584	8
					8			8
5139	3.71088	8	5169	3.71341	8	5199	3.71592	8
5140	3.71096	9	5170	3.71349	8	5200	3.71600	9
5141	3.71105	8	5171	3.71357	9	5201	3.71609	8
					8			8
5142	3.71113	9	5172	3.71366	8	5202	3.71617	8
5143	3.71122	8	5173	3.71374	9	5203	3.71625	9
5144	3.71130	9	5174	3.71383	8	5204	3.71634	8
					8			8
5145	3.71139	8	5175	3.71391	8	5205	3.71642	8
5146	3.71147	8	5176	3.71399	9	5206	3.71650	9
5147	3.71155	9	5177	3.71408	8	5207	3.71659	8
					8			8
5148	3.71164	8	5178	3.71416	9	5208	3.71667	8
5149	3.71172	9	5179	3.71425	8	5209	3.71675	9
5150	3.71181	8	5180	3.71433	8	5210	3.71684	8
					8			8
5151	3.71189	9	5181	3.71441	9	5211	3.71692	8
5152	3.71198	8	5182	3.71450	8	5212	3.71700	9
5153	3.71206	8	5183	3.71458	8	5213	3.71709	8
					8			8
5154	3.71214	9	5184	3.71466	9	5214	3.71717	8
5155	3.71223	8	5185	3.71475	8	5215	3.71725	9
5156	3.71231	9	5186	3.71483	9	5216	3.71734	8
					8			8
5157	3.71240	8	5187	3.71492	8	5217	3.71742	8
5158	3.71248	9	5188	3.71500	8	5218	3.71750	9
5159	3.71257	8	5189	3.71508	9	5219	3.71759	8
5160	3.71265	8	5190	3.71517	9	5220	3.71767	8

Nomb.	1. 27' 0	D.	Nomb.	1. 27' 30	D.	Nomb.	1. 28' 0"	D.
	Logarit.			Logarit.			Logarit.	
5220	3.71767	8	5250	3.72016	8	5280	3.72263	9
5221	3.71775	8	5251	3.72024	8	5281	3.72272	8
5222	3.71784	9	5252	3.72032	8	5282	3.72280	8
		8			9			8
5223	3.71792	8	5253	3.72041	8	5283	3.72288	8
5224	3.71800	8	5254	3.72049	8	5284	3.72296	8
5225	3.71809	9	5255	3.72057	8	5285	3.72304	9
		8			9			8
5226	3.71817	8	5256	3.72066	8	5286	3.72313	8
5227	3.71825	8	5257	3.72074	8	5287	3.72321	8
5228	3.71834	9	5258	3.72082	8	5288	3.72329	8
		8			8			8
5229	3.71842	8	5259	3.72090	9	5289	3.72337	9
5230	3.71850	8	5260	3.72099	8	5290	3.72346	8
5231	3.71858	8	5261	3.72107	8	5291	3.72354	8
		9			8			8
5232	3.71867	8	5262	3.72115	8	5292	3.72362	8
5233	3.71875	8	5263	3.72123	8	5293	3.72370	8
5234	3.71883	8	5264	3.72132	9	5294	3.72378	8
		9			8			9
5235	3.71892	8	5265	3.72140	8	5295	3.72387	8
5236	3.71900	8	5266	3.72148	8	5296	3.72395	8
5237	3.71908	8	5267	3.72156	8	5297	3.72405	8
		9			9			8
5238	3.71917	8	5268	3.72165	8	5298	3.72411	8
5239	3.71925	8	5269	3.72173	8	5299	3.72419	9
5240	3.71933	8	5270	3.72181	8	5300	3.72428	8
		8			8			8
5241	3.71941	9	5271	3.72189	9	5301	3.72436	8
5242	3.71950	8	5272	3.72198	8	5302	3.72444	8
5243	3.71958	8	5273	3.72206	8	5303	3.72452	8
		8			8			8
5244	3.71966	9	5274	3.72214	8	5304	3.72460	9
5245	3.71975	8	5275	3.72222	8	5305	3.72469	8
5246	3.71983	8	5276	3.72230	8	5306	3.72477	8
		8			9			8
5247	3.71991	8	5277	3.72239	8	5307	3.72485	8
5248	3.71999	8	5278	3.72247	8	5308	3.72493	8
5249	3.72008	9	5279	3.72255	8	5309	3.72501	8
5250	3.72016	8	5280	3.72263	8	5310	3.72509	8



Nomb.	1.28'30"	D.	Nomb.	1.29'0"	D.	Nomb.	1.29'30'	D.
	Logarit.			Logarit.			Logarit.	
5310	3.72509	9	5340	3.72754	8	5370	3.72997	9
5311	3.72518	8	5341	3.72762	8	5371	3.73006	8
5312	3.72526	8	5342	3.72770	9	5372	3.73014	8
5313	3.72534	8	5343	3.72779	8	5373	3.73022	8
5314	3.72542	8	5344	3.72787	8	5374	3.73030	8
5315	3.72550	8	5345	3.72795	8	5375	3.73038	8
5316	3.72558	9	5346	3.72803	8	5376	3.73046	8
5317	3.72567	8	5347	3.72811	8	5377	3.73054	8
5318	3.72575	8	5348	3.72819	8	5378	3.73062	8
5319	3.72583	8	5349	3.72827	8	5379	3.73070	8
5320	3.72591	8	5350	3.72835	8	5380	3.73078	8
5321	3.72599	8	5351	3.72843	8	5381	3.73086	8
5322	3.72607	9	5352	3.72852	9	5382	3.73094	8
5323	3.72616	8	5353	3.72860	8	5383	3.73102	8
5324	3.72624	8	5354	3.72868	8	5384	3.73111	9
5325	3.72632	8	5355	3.72876	8	5385	3.73119	8
5326	3.72640	8	5356	3.72884	8	5386	3.73127	8
5327	3.72648	8	5357	3.72892	8	5387	3.73135	8
5328	3.72656	9	5358	3.72900	8	5388	3.73143	8
5329	3.72665	8	5359	3.72908	8	5389	3.73151	8
5330	3.72673	8	5360	3.72916	8	5390	3.73159	8
5331	3.72681	8	5361	3.72925	9	5391	3.73167	8
5332	3.72689	8	5362	3.72933	8	5392	3.73175	8
5333	3.72697	8	5363	3.72941	8	5393	3.73183	8
5334	3.72705	8	5364	3.72949	8	5394	3.73191	8
5335	3.72713	8	5365	3.72957	8	5395	3.73199	8
5336	3.72722	9	5366	3.72965	8	5396	3.73207	8
5337	3.72730	8	5367	3.72973	8	5397	3.73215	8
5338	3.72738	8	5368	3.72981	8	5398	3.73223	8
5339	3.72746	8	5369	3.72989	8	5399	3.73231	8
5340	3.72754	8	5370	3.72997	8	5400	3.73239	8



r. 30' 0"			r. 30' 30"			r. 31' 0"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
5400	3.73239	8	5430	3.73480	8	5460	3.73719	8
5401	3.73247	8	5431	3.73488	8	5461	3.73727	8
5402	3.73255	8	5432	3.73496	8	5462	3.73735	8
5403	3.73263	8	5433	3.73504	8	5463	3.73743	8
5404	3.73272	8	5434	3.73512	8	5464	3.73751	8
5405	3.73280	8	5435	3.73520	8	5465	3.73759	8
5406	3.73288	8	5436	3.73528	8	5466	3.73767	8
5407	3.73296	8	5437	3.73536	8	5467	3.73775	8
5408	3.73304	8	5438	3.73544	8	5468	3.73783	8
5409	3.73312	8	5439	3.73552	8	5469	3.73791	8
5410	3.73320	8	5440	3.73560	8	5470	3.73799	8
5411	3.73328	8	5441	3.73568	8	5471	3.73807	8
5412	3.73336	8	5442	3.73576	8	5472	3.73815	8
5413	3.73344	8	5443	3.73584	8	5473	3.73823	7
5414	3.73352	8	5444	3.73592	8	5474	3.73830	8
5415	3.73360	8	5445	3.73600	8	5475	3.73838	8
5416	3.73368	8	5446	3.73608	8	5476	3.73846	8
5417	3.73376	8	5447	3.73616	8	5477	3.73854	8
5418	3.73384	8	5448	3.73624	8	5478	3.73862	8
5419	3.73392	8	5449	3.73632	8	5479	3.73870	8
5420	3.73400	8	5450	3.73640	8	5480	3.73878	8
5421	3.73408	8	5451	3.73648	8	5481	3.73886	8
5422	3.73416	8	5452	3.73656	8	5482	3.73894	8
5423	3.73424	8	5453	3.73664	8	5483	3.73902	8
5424	3.73432	8	5454	3.73672	7	5484	3.73910	8
5425	3.73440	8	5455	3.73679	8	5485	3.73918	8
5426	3.73448	8	5456	3.73687	8	5486	3.73926	7
5427	3.73456	8	5457	3.73696	8	5487	3.73933	8
5428	3.73464	8	5458	3.73703	8	5488	3.73941	8
5429	3.73472	8	5459	3.73711	8	5489	3.73949	8
5430	3.73480	8	5460	3.73719	8	5490	3.73957	8

1.31'30"			1.32'0"			1.32'30"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
5490	3.73957	8	5520	3.74194	8	5550	3.74429	8
5491	3.73965	8	5521	3.74202	8	5551	3.74437	8
5492	3.73973	8	5522	3.74210	8	5552	3.74445	8
5493	3.73981	8	5523	3.74218	7	5553	3.74453	8
5494	3.73989	8	5524	3.74225	8	5554	3.74461	7
5495	3.73997	8	5525	3.74233	8	5555	3.74468	8
5496	3.74005	8	5526	3.74241	8	5556	3.74476	8
5497	3.74013	8	5527	3.74249	8	5557	3.74484	8
5498	3.74020	7	5528	3.74257	8	5558	3.74492	8
		8	5529	3.74265	8	5559	3.74500	7
5499	3.74028	8	5530	3.74273	8	5560	3.74507	8
5500	3.74036	8	5531	3.74280	7	5561	3.74515	8
5501	3.74044	8			8			8
5502	3.74052	8	5532	3.74288	8	5562	3.74523	8
5503	3.74060	8	5533	3.74296	8	5563	3.74531	8
5504	3.74068	8	5534	3.74304	8	5564	3.74539	8
		8	5535	3.74312	8	5565	3.74547	7
5505	3.74076	8	5536	3.74320	7	5566	3.74554	8
5506	3.74084	8	5537	3.74327	8	5567	3.74562	8
5507	3.74092	7			8			8
5508	3.74099	8	5538	3.74335	8	5568	3.74570	8
5509	3.74107	8	5539	3.74343	8	5569	3.74578	8
5510	3.74115	8	5540	3.74351	8	5570	3.74586	7
		8	5541	3.74359	8	5571	3.74595	8
5511	3.74123	8	5542	3.74367	7	5572	3.74601	8
5512	3.74131	8	5543	3.74374	8	5573	3.74609	8
5513	3.74139	8			8			8
5514	3.74147	8	5544	3.74382	8	5574	3.74617	7
5515	3.74155	7	5545	3.74390	8	5575	3.74624	8
5516	3.74162	8	5546	3.74398	8	5576	3.74632	8
		8			8			8
5517	3.74170	8	5547	3.74406	8	5577	3.74640	8
5518	3.74178	8	5548	3.74414	7	5578	3.74648	8
5519	3.74186	8	5549	3.74421	8	5579	3.74656	7
5520	3.74194	8	5550	3.74429	8	5580	3.74663	7

Nomb	1.33 0°	D.	Nomb.	1.33'30"	D.	Nomb.	1.34'0'	D.
	Logarit.			Logarit.			Logarit.	
5580	3.74665	8	5610	3.74896	8	5640	3.75128	8
5581	3.74671	8	5611	3.74904	8	5641	3.75130	7
5582	3.74679	8	5612	3.74912	8	5642	3.75145	8
5583	3.74687	8	5613	3.74920	7	5643	3.75151	8
5584	3.74695	7	5614	3.74927	8	5644	3.75159	7
5585	3.74702	8	5615	3.74935	8	5645	3.75166	8
5586	3.74710	8	5616	3.74943	7	5646	3.75174	8
5587	3.74718	8	5617	3.74950	8	5647	3.75182	7
5588	3.74726	7	5618	3.74958	8	5648	3.75189	8
5589	3.74733	8	5619	3.74966	8	5649	3.75197	8
5590	3.74741	8	5620	3.74974	7	5650	3.75205	8
5591	3.74749	8	5621	3.74981	8	5651	3.75215	7
5592	3.74757	7	5622	3.74989	8	5652	3.75220	8
5593	3.74764	8	5623	3.74997	8	5653	3.75228	8
5594	3.74772	8	5624	3.75005	7	5654	3.75236	7
5595	3.74780	8	5625	3.75012	8	5655	3.75243	8
5596	3.74788	8	5626	3.75020	8	5656	3.75251	8
5597	3.74796	7	5627	3.75028	7	5657	3.75259	7
5598	3.74803	8	5628	3.75035	8	5658	3.75266	8
5599	3.74811	8	5629	3.75043	8	5659	3.75274	8
5600	3.74819	8	5630	3.75051	8	5660	3.75282	7
5601	3.74827	7	5631	3.75059	7	5661	3.75289	8
5602	3.74834	8	5632	3.75066	8	5662	3.75297	8
5603	3.74842	8	5633	3.75074	8	5663	3.75305	7
5604	3.74850	8	5634	3.75082	7	5664	3.75312	8
5605	3.74858	7	5635	3.75089	8	5665	3.75320	8
5606	3.74865	8	5636	3.75097	8	5666	3.75328	7
5607	3.74873	8	5637	3.75105	8	5667	3.75335	8
5608	3.74881	8	5638	3.75113	7	5668	3.75343	8
5609	3.74889	7	5639	3.75120	8	5669	3.75351	7
5610	3.74896		5640	3.75128		5670	3.75358	



Nomb.	1.34'30"	D.	Nomb.	1.35'0"	D.	Nomb.	1.35'30"	D.
	Logarit.			Logarit.			Logarit.	
5670	3.75358	8	5700	3.75587	8	5730	3.75815	8
5671	3.75366	8	5701	3.75595	8	5731	3.75823	8
5672	3.75374		5702	3.75603		5732	3.75831	7
5673	3.75381	7	5703	3.75610	7	5733	3.75838	8
5674	3.75389	8	5704	3.75618	8	5734	3.75846	7
5675	3.75397		5705	3.75626		5735	3.75853	8
5676	3.75404	7	5706	3.75633	7	5736	3.75861	7
5677	3.75412	8	5707	3.75641	8	5737	3.75868	8
5678	3.75420	8	5708	3.75648	7	5738	3.75876	8
5679	3.75427	7	5709	3.75656	8	5739	3.75884	7
5680	3.75435	8	5710	3.75664	8	5740	3.75891	8
5681	3.75442	7	5711	3.75671	7	5741	3.75899	7
5682	3.75450	8	5712	3.75679	8	5742	3.75906	8
5683	3.75458	8	5713	3.75686	7	5743	3.75914	7
5684	3.75465	7	5714	3.75694	8	5744	3.75921	8
5685	3.75473	8	5715	3.75702	8	5745	3.75929	8
5686	3.75481	8	5716	3.75709	7	5746	3.75937	7
5687	3.75488	7	5717	3.75717	8	5747	3.75944	8
5688	3.75496	8	5718	3.75724	7	5748	3.75952	7
5689	3.75504	8	5719	3.75732	8	5749	3.75959	8
5690	3.75511	7	5720	3.75740	8	5750	3.75967	7
5691	3.75519	8	5721	3.75747	7	5751	3.75974	8
5692	3.75526	7	5722	3.75755	8	5752	3.75982	7
5693	3.75534	8	5723	3.75762	7	5753	3.75989	8
5694	3.75542	8	5724	3.75770	8	5754	3.75997	8
5695	3.75549	7	5725	3.75778	8	5755	3.76005	7
5696	3.75557	8	5726	3.75785	7	5756	3.76012	8
5697	3.75565	8	5727	3.75793	8	5757	3.76020	7
5698	3.75572	7	5728	3.75800	7	5758	3.76027	8
5699	3.75580	8	5729	3.75808	8	5759	3.76035	7
5700	3.75587	7	5730	3.75815	7	5760	3.76042	7



Nomb	1. 36' 0"	D.	Nomb.	1. 36' 30"	D.	Nomb	1. 37' 0"	D.
	Logarit.			Logarit.			Logarit.	
5760	3.76042	8	5790	3.76268	7	5820	3.76492	8
5761	3.76050	7	5791	3.76275	8	5821	3.76500	7
5762	3.76057	8	5792	3.76283	7	5822	3.76507	8
5763	3.76065	7	5793	3.76290	8	5823	3.76515	7
5764	3.76072	8	5794	3.76298	7	5824	3.76522	8
5765	3.76080	7	5795	3.76305	8	5825	3.76530	7
5766	3.76087	8	5796	3.76313	7	5826	3.76537	8
5767	3.76095	8	5797	3.76320	8	5827	3.76545	7
5768	3.76103	7	5798	3.76328	8	5828	3.76552	7
5769	3.76110	8	5799	3.76335	7	5829	3.76559	8
5770	3.76118	7	5800	3.76343	8	5830	3.76567	7
5771	3.76125	8	5801	3.76350	7	5831	3.76574	8
5772	3.76133	7	5802	3.76358	8	5832	3.76582	7
5773	3.76140	8	5803	3.76365	7	5833	3.76589	8
5774	3.76148	7	5804	3.76373	8	5834	3.76597	7
5775	3.76155	8	5805	3.76380	7	5835	3.76604	8
5776	3.76163	7	5806	3.76388	8	5836	3.76612	7
5777	3.76170	8	5807	3.76395	7	5837	3.76619	8
5778	3.76178	7	5808	3.76403	8	5838	3.76626	7
5779	3.76185	8	5809	3.76410	7	5839	3.76634	8
5780	3.76193	7	5810	3.76418	8	5840	3.76641	7
5781	3.76200	8	5811	3.76425	7	5841	3.76649	8
5782	3.76208	7	5812	3.76433	8	5842	3.76656	7
5783	3.76215	8	5813	3.76440	7	5843	3.76664	8
5784	3.76223	7	5814	3.76448	8	5844	3.76671	7
5785	3.76230	8	5815	3.76455	7	5845	3.76678	8
5786	3.76238	7	5816	3.76462	8	5846	3.76686	7
5787	3.76245	8	5817	3.76470	7	5847	3.76693	8
5788	3.76253	7	5818	3.76477	8	5848	3.76701	7
5789	3.76260	8	5819	3.76485	7	5849	3.76708	8
5790	3.76268		5820	3.76492	7	5850	3.76716	

1.37'30"			1.38'0"			1.38'30"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
5850	3.76716		5880	3.76938	7	5910	3.77159	7
5851	3.76725	7	5881	3.76945	8	5911	3.77166	7
5852	3.76730	8	5882	3.76953	7	5912	3.77173	8
5853	3.76737	7	5883	3.76960	7	5913	3.77181	7
5854	3.76745	8	5884	3.76967	8	5914	3.77188	7
5855	3.76753	7	5885	3.76975	7	5915	3.77195	8
5856	3.76760	8	5886	3.76982	7	5916	3.77203	7
5857	3.76768	7	5887	3.76989	8	5917	3.77210	7
5858	3.76775	8	5888	3.76997	7	5918	3.77217	8
5859	3.76782	7	5889	3.77004	8	5919	3.77225	7
5860	3.76790	8	5890	3.77012	7	5920	3.77232	8
5861	3.76797	7	5891	3.77019	8	5921	3.77240	7
5862	3.76805	8	5892	3.77026	7	5922	3.77247	7
5863	3.76812	7	5893	3.77034	8	5923	3.77254	8
5864	3.76819	8	5894	3.77041	7	5924	3.77262	7
5865	3.76827	7	5895	3.77048	8	5925	3.77269	7
5866	3.76834	8	5896	3.77056	7	5926	3.77276	7
5867	3.76842	7	5897	3.77063	8	5927	3.77283	8
5868	3.76849	8	5898	3.77070	7	5928	3.77291	7
5869	3.76856	7	5899	3.77078	8	5929	3.77298	7
5870	3.76864	8	5900	3.77085	7	5930	3.77305	8
5871	3.76871	7	5901	3.77093	8	5931	3.77313	7
5872	3.76879	8	5902	3.77100	7	5932	3.77320	7
5873	3.76886	7	5903	3.77107	8	5933	3.77327	8
5874	3.76893	8	5904	3.77115	7	5934	3.77335	7
5875	3.76901	7	5905	3.77122	8	5935	3.77342	7
5876	3.76908	8	5906	3.77129	7	5936	3.77349	8
5877	3.76916	7	5907	3.77137	8	5937	3.77357	7
5878	3.76923	8	5908	3.77144	7	5938	3.77364	7
5879	3.76930	7	5909	3.77151	8	5939	3.77371	8
5880	3.76938	8	5910	3.77159	7	5940	3.77379	8

Nomb.	1. 39' 0"	D.	Nomb.	1. 39' 30"	D.	Nomb.	1. 40' 0"	D.
	Logarit.			Logarit.			Logarit.	
5940	3.77379	7	5970	3.77597	8	6000	3.77815	7
5941	3.77386	7	5971	3.77605	7	6001	3.77822	8
5942	3.77393	8	5972	3.77612	7	6002	3.77830	7
5943	3.77401	7	5973	3.77619	8	6003	3.77837	7
5944	3.77408	7	5974	3.77627	7	6004	3.77844	7
5945	3.77415	7	5975	3.77634	7	6005	3.77851	8
5946	3.77422	8	5976	3.77641	7	6006	3.77859	7
5947	3.77430	7	5977	3.77648	8	6007	3.77866	7
5948	3.77437	7	5978	3.77656	7	6008	3.77873	7
5949	3.77444	8	5979	3.77663	7	6009	3.77880	7
5950	3.77452	7	5980	3.77670	7	6010	3.77887	8
5951	3.77459	7	5981	3.77677	8	6011	3.77895	7
5952	3.77466	8	5982	3.77685	7	6012	3.77902	7
5953	3.77474	7	5983	3.77692	7	6013	3.77909	7
5954	3.77481	7	5984	3.77699	7	6014	3.77916	8
5955	3.77488	7	5985	3.77706	8	6015	3.77924	7
5956	3.77495	8	5986	3.77714	7	6016	3.77931	7
5957	3.77503	7	5987	3.77721	7	6017	3.77938	7
5958	3.77510	7	5988	3.77728	7	6018	3.77945	7
5959	3.77517	8	5989	3.77735	8	6019	3.77952	8
5960	3.77525	7	5990	3.77743	7	6020	3.77960	7
5961	3.77532	7	5991	3.77750	7	6021	3.77967	7
5962	3.77539	7	5992	3.77757	7	6022	3.77974	7
5963	3.77546	8	5993	3.77764	8	6023	3.77981	7
5964	3.77554	7	5994	3.77772	7	6024	3.77988	8
5965	3.77561	7	5995	3.77779	7	6025	3.77996	7
5966	3.77568	8	5996	3.77786	7	6026	3.78003	7
5967	3.77576	7	5997	3.77793	8	6027	3.78010	7
5968	3.77583	7	5998	3.77801	7	6028	3.78017	8
5969	3.77590	7	5999	3.77808	7	6029	3.78025	7
5970	3.77597	7	6000	3.77815	7	6030	3.78032	7



Nomb.	1. 40' 30"	D.	Nomb.	1. 41' 0"	D.	Nomb.	1. 41' 30"	D.
	Logarit.			Logarit.			Logarit.	
6030	3.78032	7	6060	3.78247	7	6090	3.78462	7
6031	3.78039	7	6061	3.78254	8	6091	3.78469	7
6032	3.78046	7	6062	3.78262	7	6092	3.78476	7
6033	3.78053	8	6063	3.78269	7	6093	3.78483	7
6034	3.78061	7	6064	3.78276	7	6094	3.78490	7
6035	3.78068	7	6065	3.78283	7	6095	3.78497	7
6036	3.78075	7	6066	3.78290	7	6096	3.78504	8
6037	3.78082	7	6067	3.78297	8	6097	3.78512	7
6038	3.78089	8	6068	3.78305	7	6098	3.78519	7
6039	3.78097	7	6069	3.78312	7	6099	3.78526	7
6040	3.78104	7	6070	3.78319	7	6100	3.78533	7
6041	3.78111	7	6071	3.78326	7	6101	3.78540	7
6042	3.78118	7	6072	3.78333	7	6102	3.78547	7
6043	3.78125	7	6073	3.78340	7	6103	3.78554	7
6044	3.78132	8	6074	3.78347	8	6104	3.78561	8
6045	3.78140	7	6075	3.78355	7	6105	3.78569	7
6046	3.78147	7	6076	3.78362	7	6106	3.78576	7
6047	3.78154	7	6077	3.78369	7	6107	3.78583	7
6048	3.78161	7	6078	3.78376	7	6108	3.78590	7
6049	3.78168	8	6079	3.78383	7	6109	3.78597	7
6050	3.78176	7	6080	3.78390	8	6110	3.78604	7
6051	3.78183	7	6081	3.78398	7	6111	3.78611	7
6052	3.78190	7	6082	3.78405	7	6112	3.78618	7
6053	3.78197	7	6083	3.78412	7	6113	3.78625	8
6054	3.78204	7	6084	3.78419	7	6114	3.78633	7
6055	3.78211	8	6085	3.78426	7	6115	3.78640	7
6056	3.78219	7	6086	3.78433	7	6116	3.78647	7
6057	3.78226	7	6087	3.78440	7	6117	3.78654	7
6058	3.78233	7	6088	3.78447	8	6118	3.78661	7
6059	3.78240	7	6089	3.78455	8	6119	3.78668	7
6060	3.78247	7	6090	3.78462	7	6120	3.78675	7



Nomb.	1.42' 0"	D.	Nomb.	1.42' 30"	D.	Nomb.	1.43' 0"	D.
	Logarit.			Logarit.			Logarit.	
6120	3.78675	7	6150	3.78888	7	6180	3.79099	7
6121	3.78682	7	6151	3.78895	7	6181	3.79106	7
6122	3.78689	7	6152	3.78902	7	6182	3.79113	7
6123	3.78696	8	6153	3.78909	7	6183	3.79120	7
6124	3.78704	7	6154	3.78916	7	6184	3.79127	7
6125	3.78711	7	6155	3.78923	7	6185	3.79134	7
6126	3.78718	7	6156	3.78930	7	6186	3.79141	7
6127	3.78725	7	6157	3.78937	7	6187	3.79148	7
6128	3.78732	7	6158	3.78944	7	6188	3.79155	7
6129	3.78739	7	6159	3.78951	7	6189	3.79162	7
6130	3.78746	7	6160	3.78958	7	6190	3.79169	7
6131	3.78753	7	6161	3.78965	7	6191	3.79176	7
6132	3.78760	7	6162	3.78972	7	6192	3.79183	7
6133	3.78767	7	6163	3.78979	7	6193	3.79190	7
6134	3.78774	7	6164	3.78986	7	6194	3.79197	7
6135	3.78781	8	6165	3.78993	7	6195	3.79204	7
6136	3.78789	7	6166	3.79000	7	6196	3.79211	7
6137	3.78796	7	6167	3.79007	7	6197	3.79218	7
6138	3.78803	7	6168	3.79014	7	6198	3.79225	7
6139	3.78810	7	6169	3.79021	8	6199	3.79232	7
6140	3.78817	7	6170	3.79029	7	6200	3.79239	7
6141	3.78824	7	6171	3.79036	7	6201	3.79246	7
6142	3.78831	7	6172	3.79043	7	6202	3.79253	7
6143	3.78838	7	6173	3.79050	7	6203	3.79260	7
6144	3.78845	7	6174	3.79057	7	6204	3.79267	7
6145	3.78852	7	6175	3.79064	7	6205	3.79274	7
6146	3.78859	7	6176	3.79071	7	6206	3.79281	7
6147	3.78866	7	6177	3.79078	7	6207	3.79288	7
6148	3.78873	7	6178	3.79085	7	6208	3.79295	7
6149	3.78880	7	6179	3.79092	7	6209	3.79302	7
6150	3.78888	8	6180	3.79099	7	6210	3.79309	7

1.43'30"			1.44'0"			1.44'30"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
6210	3.79309	7	6240	3.79518	7	6270	3.79727	7
6211	3.79316	7	6241	3.79525	7	6271	3.79734	7
6212	3.79323	7	6242	3.79532	7	6272	3.79741	7
6213	3.79330	7	6243	3.79539	7	6273	3.79748	6
6214	3.79337	7	6244	3.79546	7	6274	3.79754	7
6215	3.79344	7	6245	3.79553	7	6275	3.79761	7
6216	3.79351	7	6246	3.79560	7	6276	3.79768	7
6217	3.79358	7	6247	3.79567	7	6277	3.79775	7
6218	3.79365	7	6248	3.79574	7	6278	3.79782	7
6219	3.79372	7	6249	3.79581	7	6279	3.79789	7
6220	3.79379	7	6250	3.79588	7	6280	3.79796	7
6221	3.79386	7	6251	3.79595	7	6281	3.79803	7
6222	3.79393	7	6252	3.79602	7	6282	3.79810	7
6223	3.79400	7	6253	3.79609	7	6283	3.79817	7
6224	3.79407	7	6254	3.79616	7	6284	3.79824	7
6225	3.79414	7	6255	3.79623	7	6285	3.79831	6
6226	3.79421	7	6256	3.79630	7	6286	3.79837	7
6227	3.79428	7	6257	3.79637	7	6287	3.79844	7
6228	3.79435	7	6258	3.79644	6	6288	3.79851	7
6229	3.79442	7	6259	3.79650	7	6289	3.79858	7
6230	3.79449	7	6260	3.79657	7	6290	3.79865	7
6231	3.79456	7	6261	3.79664	7	6291	3.79872	7
6232	3.79463	7	6262	3.79671	7	6292	3.79879	7
6233	3.79470	7	6263	3.79678	7	6293	3.79886	7
6234	3.79477	7	6264	3.79685	7	6294	3.79893	7
6235	3.79484	7	6265	3.79692	7	6295	3.79900	6
6236	3.79491	7	6266	3.79699	7	6296	3.79906	7
6237	3.79498	7	6267	3.79706	7	6297	3.79913	7
6238	3.79505	7	6268	3.79713	7	6298	3.79920	7
6239	3.79511	6	6269	3.79720	7	6299	3.79927	7
6240	3.79518	7	6270	3.79727	7	6300	3.79934	7

Nomb.	t. 45' 0"	D.	Nomb.	t. 45' 30"	D.	Nomb.	t. 46' 0"	D.
	Logarit.			Logarit.			Logarit.	
6300	3.79934		6330	3.80140	7	6360	3.80346	7
6301	3.79941	7	6331	3.80147	7	6361	3.80353	6
6302	3.79948	7	6332	3.80154	7	6362	3.80359	7
6303	3.79955	7	6333	3.80161	7	6363	3.80366	7
6304	3.79962	7	6334	3.80168	7	6364	3.80373	7
6305	3.79969	6	6335	3.80175	7	6365	3.80380	7
6306	3.79975	7	6336	3.80182	6	6366	3.80387	6
6307	3.79982	7	6337	3.80188	7	6367	3.80393	7
6308	3.79989	7	6338	3.80195	7	6368	3.80400	7
6309	3.79996	7	6339	3.80202	7	6369	3.80407	7
6310	3.80003	7	6340	3.80209	7	6370	3.80414	7
6311	3.80010	7	6341	3.80216	7	6371	3.80421	7
6312	3.80017	7	6342	3.80223	6	6372	3.80428	6
6313	3.80024	7	6343	3.80229	7	6373	3.80434	7
6314	3.80030	6	6344	3.80236	7	6374	3.80441	7
6315	3.80037	7	6345	3.80243	7	6375	3.80448	7
6316	3.80044	7	6346	3.80250	7	6376	3.80455	7
6317	3.80051	7	6347	3.80257	7	6377	3.80462	6
6318	3.80058	7	6348	3.80264	7	6378	3.80468	7
6319	3.80065	7	6349	3.80271	6	6379	3.80475	7
6320	3.80072	7	6350	3.80277	7	6380	3.80482	7
6321	3.80079	7	6351	3.80284	7	6381	3.80489	7
6322	3.80085	6	6352	3.80291	7	6382	3.80496	6
6323	3.80092	7	6353	3.80298	7	6383	3.80502	7
6324	3.80099	7	6354	3.80305	7	6384	3.80509	7
6325	3.80106	7	6355	3.80312	6	6385	3.80516	7
6326	3.80113	7	6356	3.80318	6	6386	3.80523	7
6327	3.80120	7	6357	3.80325	7	6387	3.80530	6
6328	3.80127	7	6358	3.80332	7	6388	3.80536	7
6329	3.80134	7	6359	3.80339	7	6389	3.80543	7
6330	3.80140	6	6360	3.80346	7	6390	3.80550	7

Nomb.	1.46'30"	D.	Nomb.	1.47'0"	D.	Nomb.	1.47'30"	D.
	Logarit.			Logarit.			Logarit.	
6390	3.80550		6420	3.80754	6	6450	3.80956	7
6391	3.80557	7	6421	3.80760	7	6451	3.80963	6
6392	3.80564	6	6422	3.80767	7	6452	3.80969	7
6393	3.80570	7	6423	3.80774	7	6453	3.80976	7
6394	3.80577	7	6424	3.80781	6	6454	3.80983	7
6395	3.80584	7	6425	3.80787	7	6455	3.80990	6
6396	3.80591	7	6426	3.80794	7	6456	3.80996	7
6397	3.80598	6	6427	3.80801	7	6457	3.81003	7
6398	3.80604	7	6428	3.80808	6	6458	3.81010	7
6399	3.80611	7	6429	3.80814	7	6459	3.81017	6
6400	3.80618	7	6430	3.80821	7	6460	3.81023	7
6401	3.80625	7	6431	3.80828	7	6461	3.81030	7
6402	3.80632	6	6432	3.80835	6	6462	3.81037	6
6403	3.80638	7	6433	3.80841	7	6463	3.81043	7
6404	3.80645	7	6434	3.80848	7	6464	3.81050	7
6405	3.80652	7	6435	3.80855	7	6465	3.81057	7
6406	3.80659	6	6436	3.80862	6	6466	3.81064	6
6407	3.80665	7	6437	3.80868	7	6467	3.81070	7
6408	3.80672	7	6438	3.80875	7	6468	3.81077	7
6409	3.80679	7	6439	3.80882	7	6469	3.81084	6
6410	3.80686	7	6440	3.80889	6	6470	3.81090	7
6411	3.80693	6	6441	3.80895	7	6471	3.81097	7
6412	3.80699	7	6442	3.80902	7	6472	3.81104	7
6413	3.80706	7	6443	3.80909	7	6473	3.81111	6
6414	3.80713	7	6444	3.80916	6	6474	3.81117	7
6415	3.80720	6	6445	3.80922	7	6475	3.81124	7
6416	3.80726	7	6446	3.80929	7	6476	3.81131	6
6417	3.80733	7	6447	3.80936	7	6477	3.81137	7
6418	3.80740	7	6448	3.80943	6	6478	3.81144	7
6419	3.80747	7	6449	3.80949	7	6479	3.81151	7
6420	3.80754	7	6450	3.80956	7	6480	3.81158	7



Nomb.	1.48'0"	D.	Nomb.	1.48'30"	D.	Nomb.	1.49'0"	D.
	Logarit.			Logarit.			Logarit.	
6480	3.81158	6	6510	3.81358	7	6540	3.81558	6
6481	3.81164	7	6511	3.81365	6	6541	3.81564	7
6482	3.81171	7	6512	3.81371	7	6542	3.81571	7
6483	3.81178	6	6513	3.81378	7	6543	3.81578	6
6484	3.81184	7	6514	3.81385	6	6544	3.81584	7
6485	3.81191	7	6515	3.81391	7	6545	3.81591	7
6486	3.81198	6	6516	3.81398	7	6546	3.81598	6
6487	3.81204	7	6517	3.81405	6	6547	3.81604	7
6488	3.81211	7	6518	3.81411	7	6548	3.81611	6
6489	3.81218	6	6519	3.81418	7	6549	3.81617	7
6490	3.81224	7	6520	3.81425	6	6550	3.81624	7
6491	3.81231	7	6521	3.81431	7	6551	3.81631	6
6492	3.81238	7	6522	3.81438	7	6552	3.81637	7
6493	3.81245	6	6523	3.81445	6	6553	3.81644	7
6494	3.81251	7	6524	3.81451	7	6554	3.81651	6
6495	3.81258	7	6525	3.81458	7	6555	3.81657	7
6496	3.81265	6	6526	3.81465	6	6556	3.81664	7
6497	3.81271	7	6527	3.81471	7	6557	3.81671	6
6498	3.81278	7	6528	3.81478	7	6558	3.81677	7
6499	3.81285	6	6529	3.81485	6	6559	3.81684	6
6500	3.81291	7	6530	3.81491	7	6560	3.81690	7
6501	3.81298	7	6531	3.81498	7	6561	3.81697	7
6502	3.81305	6	6532	3.81505	6	6562	3.81704	6
6503	3.81311	7	6533	3.81511	7	6563	3.81710	7
6504	3.81318	7	6534	3.81518	7	6564	3.81717	6
6505	3.81325	6	6535	3.81525	6	6565	3.81723	7
6506	3.81331	7	6536	3.81531	7	6566	3.81730	6
6507	3.81338	7	6537	3.81538	6	6567	3.81737	7
6508	3.81345	6	6538	3.81544	7	6568	3.81743	6
6509	3.81351	7	6539	3.81551	7	6569	3.81750	7
6510	3.81358	7	6540	3.81558	7	6570	3.81757	7

Nomb.	1.49'30"	D.	Nomb.	1.50' 0"	D.	Nomb.	1.50'30'	D.
	Logarit.			Logarit.			Logarit.	
6570	3.81757	6	6600	3.81954	7	6630	3.82151	7
6571	3.81763	7	6601	3.81961	7	6631	3.82158	6
6572	3.81770	6	6602	3.81968	6	6632	3.82164	7
6573	3.81776	6	6603	3.81974	7	6633	3.82171	7
6574	3.81783	7	6604	3.81981	6	6634	3.82178	6
6575	3.81790	7	6605	3.81987	7	6635	3.82184	7
		6			6			6
6576	3.81796	7	6606	3.81994	6	6636	3.82191	6
6577	3.81803	6	6607	3.82000	7	6637	3.82197	7
6578	3.81809	7	6608	3.82007	7	6638	3.82204	6
		6			6			7
6579	3.81816	7	6609	3.82014	6	6639	3.82210	7
6580	3.81823	6	6610	3.82020	7	6640	3.82217	6
6581	3.81829	7	6611	3.82027	6	6641	3.82223	7
		6			7			6
6582	3.81836	6	6612	3.82033	6	6642	3.82230	6
6583	3.81842	7	6613	3.82040	6	6643	3.82236	7
6584	3.81849	7	6614	3.82046	7	6644	3.82243	6
		6			6			7
6585	3.81856	6	6615	3.82053	7	6645	3.82249	7
6586	3.81862	7	6616	3.82060	6	6646	3.82256	7
6587	3.81869	6	6617	3.82066	7	6647	3.82263	6
		7			6			7
6588	3.81875	7	6618	3.82073	6	6648	3.82269	6
6589	3.81882	7	6619	3.82079	7	6649	3.82276	6
6590	3.81889	6	6620	3.82086	6	6650	3.82282	7
		7			7			6
6591	3.81895	6	6621	3.82092	6	6651	3.82289	6
6592	3.81902	7	6622	3.82099	6	6652	3.82295	7
6593	3.81908	6	6623	3.82105	7	6653	3.82302	6
		7			6			7
6594	3.81915	6	6624	3.82112	7	6654	3.82308	6
6595	3.81921	7	6625	3.82119	6	6655	3.82315	7
6596	3.81928	7	6626	3.82125	7	6656	3.82321	6
		6			6			7
6597	3.81935	6	6627	3.82132	7	6657	3.82328	6
6598	3.81941	7	6628	3.82138	6	6658	3.82334	7
6599	3.81948	6	6629	3.82145	7	6659	3.82341	6
6600	3.81954	6	6630	3.82151	6	6660	3.82347	7

Nomb.	1. 51' 0"	D.	Nomb.	1. 51' 30"	D.	Nomb.	1. 52' 0"	D.
	Logarit.			Logarit.			Logarit.	
6660	3.82547	7	6690	3.82543	6	6720	3.82737	6
6661	3.82554	6	6691	3.82549	7	6721	3.82743	7
6662	3.82560	7	6692	3.82556	6	6722	3.82750	6
6663	3.82567	6	6693	3.82562	7	6723	3.82756	7
6664	3.82573	7	6694	3.82569	6	6724	3.82763	6
6665	3.82580	6	6695	3.82575	7	6725	3.82769	7
6666	3.82587	7	6696	3.82582	6	6726	3.82776	6
6667	3.82593	6	6697	3.82588	7	6727	3.82782	7
6668	3.82600	7	6698	3.82595	6	6728	3.82789	6
6669	3.82606	6	6699	3.82601	7	6729	3.82795	7
6670	3.82613	7	6700	3.82607	6	6730	3.82802	6
6671	3.82619	6	6701	3.82614	7	6731	3.82808	7
6672	3.82626	7	6702	3.82620	6	6732	3.82814	6
6673	3.82632	6	6703	3.82627	7	6733	3.82821	7
6674	3.82639	7	6704	3.82633	6	6734	3.82827	6
6675	3.82645	6	6705	3.82640	7	6735	3.82834	7
6676	3.82652	7	6706	3.82646	6	6736	3.82840	6
6677	3.82658	6	6707	3.82653	7	6737	3.82847	7
6678	3.82665	7	6708	3.82659	6	6738	3.82853	6
6679	3.82671	6	6709	3.82666	7	6739	3.82860	7
6680	3.82678	7	6710	3.82672	6	6740	3.82866	6
6681	3.82684	6	6711	3.82679	7	6741	3.82872	7
6682	3.82691	7	6712	3.82685	6	6742	3.82879	6
6683	3.82697	6	6713	3.82692	7	6743	3.82885	7
6684	3.82704	7	6714	3.82698	6	6744	3.82892	6
6685	3.82710	6	6715	3.82705	7	6745	3.82898	7
6686	3.82717	7	6716	3.82711	6	6746	3.82905	6
6687	3.82723	6	6717	3.82718	7	6747	3.82911	7
6688	3.82730	7	6718	3.82724	6	6748	3.82918	6
6689	3.82736	6	6719	3.82730	7	6749	3.82924	7
6690	3.82743	7	6720	3.82737	6	6750	3.82930	6

1.52'30"			1.53' 0"			1.53'30"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
6750	3.82930	7	6780	3.83123	6	6810	3.83315	6
6751	3.82937	6	6781	3.83129	7	6811	3.83321	6
6752	3.82943	7	6782	3.83136	6	6812	3.83327	7
6753	3.82950	6	6783	3.83142	7	6813	3.83334	6
6754	3.82956	7	6784	3.83149	6	6814	3.83340	7
6755	3.82963	6	6785	3.83155	6	6815	3.83347	6
6756	3.82969	6	6786	3.83161	7	6816	3.83353	6
6757	3.82975	7	6787	3.83168	6	6817	3.83359	7
6758	3.82982	6	6788	3.83174	7	6818	3.83366	6
6759	3.82988	7	6789	3.83181	6	6819	3.83372	6
6760	3.82995	6	6790	3.83187	6	6820	3.83378	7
6761	3.83001	7	6791	3.83193	6	6821	3.83385	6
6762	3.83008	6	6792	3.83200	7	6822	3.83391	7
6763	3.83014	6	6793	3.83206	6	6823	3.83398	6
6764	3.83020	7	6794	3.83213	7	6824	3.83404	6
6765	3.83027	6	6795	3.83219	6	6825	3.83410	7
6766	3.83033	7	6796	3.83225	7	6826	3.83417	6
6767	3.83040	6	6797	3.83232	6	6827	3.83423	6
6768	3.83046	6	6798	3.83238	7	6828	3.83429	7
6769	3.83052	7	6799	3.83245	6	6829	3.83436	6
6770	3.83059	6	6800	3.83251	6	6830	3.83442	6
6771	3.83065	7	6801	3.83257	7	6831	3.83448	7
6772	3.83072	6	6802	3.83264	6	6832	3.83455	6
6773	3.83078	7	6803	3.83270	6	6833	3.83461	6
6774	3.83085	6	6804	3.83276	7	6834	3.83467	7
6775	3.83091	6	6805	3.83283	6	6835	3.83474	6
6776	3.83097	7	6806	3.83289	6	6836	3.83480	7
6777	3.83104	6	6807	3.83296	7	6837	3.83487	6
6778	3.83110	7	6808	3.83302	6	6838	3.83493	6
6779	3.83117	6	6809	3.83308	7	6839	3.83499	7
6780	3.83123		6810	3.83315		6840	3.83506	



Nomb.	1. 54' 0"	D.	Nomb.	1. 54' 30"	D.	Nomb.	1. 55' 0"	D.
	Logarit.			Logarit.			Logarit.	
6840	3.83506	6	6870	3.83696	6	6900	3.83885	6
6841	3.83512	6	6871	3.83702	6	6901	3.83891	6
6842	3.83518	7	6872	3.83708	7	6902	3.83897	7
6843	3.83525	6	6873	3.83715	6	6903	3.83904	6
6844	3.83531	6	6874	3.83721	6	6904	3.83910	6
6845	3.83537	7	6875	3.83727	7	6905	3.83916	7
6846	3.83544	6	6876	3.83734	6	6906	3.83923	6
6847	3.83550	6	6877	3.83740	6	6907	3.83929	6
6848	3.83556	7	6878	3.83746	7	6908	3.83935	7
6849	3.83563	6	6879	3.83753	6	6909	3.83942	6
6850	3.83569	6	6880	3.83759	6	6910	3.83948	6
6851	3.83575	7	6881	3.83765	6	6911	3.83954	6
6852	3.83582	6	6882	3.83771	7	6912	3.83960	7
6853	3.83588	6	6883	3.83778	6	6913	3.83967	6
6854	3.83594	7	6884	3.83784	6	6914	3.83973	6
6855	3.83601	6	6885	3.83790	7	6915	3.83979	6
6856	3.83607	6	6886	3.83797	6	6916	3.83985	7
6857	3.83613	7	6887	3.83803	6	6917	3.83992	6
6858	3.83620	6	6888	3.83809	7	6918	3.83998	6
6859	3.83626	6	6889	3.83816	6	6919	3.84004	7
6860	3.83632	7	6890	3.83822	6	6920	3.84011	6
6861	3.83639	6	6891	3.83828	7	6921	3.84017	6
6862	3.83645	6	6892	3.83835	6	6922	3.84023	6
6863	3.83651	7	6893	3.83841	6	6923	3.84029	7
6864	3.83658	6	6894	3.83847	6	6924	3.84036	6
6865	3.83664	6	6895	3.83853	7	6925	3.84042	6
6866	3.83670	7	6896	3.83860	6	6926	3.84048	6
6867	3.83677	6	6897	3.83866	6	6927	3.84055	7
6868	3.83683	6	6898	3.83872	7	6928	3.84061	6
6869	3.83689	6	6899	3.83879	7	6929	3.84067	6
6870	3.83696	7	6900	3.83885	6	6930	3.84073	6

Nomb.	1.55'30"	D.	Nomb.	1.56' 0'	D.	Nomb.	1.56'30"	D.
	Logarit.			Logarit.			Logarit.	
6930	3.84073	7	6960	3.84261	6	6990	3.84448	6
6931	3.84080	6	6961	3.84267	6	6991	3.84454	6
6932	3.84086	6	6962	3.84273	7	6992	3.84460	6
6933	3.84092	6	6963	3.84280	6	6993	3.84466	7
6934	3.84098	7	6964	3.84286	6	6994	3.84473	6
6935	3.84105	6	6965	3.84292	6	6995	3.84479	6
6936	3.84111	6	6966	3.84298	7	6996	3.84485	6
6937	3.84117	6	6967	3.84305	6	6997	3.84491	6
6938	3.84123	7	6968	3.84311	6	6998	3.84497	7
6939	3.84130	6	6969	3.84317	6	6999	3.84504	6
6940	3.84136	6	6970	3.84323	7	7000	3.84510	6
6941	3.84142	6	6971	3.84330	6	7001	3.84516	6
6942	3.84148	6	6972	3.84336	6	7002	3.84522	6
6943	3.84155	7	6973	3.84342	6	7003	3.84528	6
6944	3.84161	6	6974	3.84348	6	7004	3.84535	7
6945	3.84167	6	6975	3.84354	7	7005	3.84541	6
6946	3.84173	7	6976	3.84361	6	7006	3.84547	6
6947	3.84180	6	6977	3.84367	6	7007	3.84553	6
6948	3.84186	6	6978	3.84373	6	7008	3.84559	7
6949	3.84192	6	6979	3.84379	7	7009	3.84566	6
6950	3.84198	7	6980	3.84386	6	7010	3.84572	6
6951	3.84205	6	6981	3.84392	6	7011	3.84578	6
6952	3.84211	6	6982	3.84398	6	7012	3.84584	6
6953	3.84217	6	6983	3.84404	6	7013	3.84590	7
6954	3.84223	7	6984	3.84410	7	7014	3.84597	6
6955	3.84230	6	6985	3.84417	6	7015	3.84603	6
6956	3.84236	6	6986	3.84423	6	7016	3.84609	6
6957	3.84242	6	6987	3.84429	6	7017	3.84615	6
6958	3.84248	7	6988	3.84435	7	7018	3.84621	7
6959	3.84255	6	6989	3.84442	6	7019	3.84628	6
6960	3.84261	6	6990	3.84448	6	7020	3.84634	6

Nomb	1.57'0"	D.	Nomb.	1.57'30	D.	Nomb	1.58'0"	D.
	Logarit.			Logarit			Logarit.	
7020	3.84634	6	7050	3.84810	6	7080	3.85003	6
7021	3.84640	6	7051	3.84825	6	7081	3.85009	7
7022	3.84646	6	7052	3.84831	6	7082	3.85016	6
7023	3.84652	6	7053	3.84837	6	7083	3.85022	6
7024	3.84658	7	7054	3.84844	7	7084	3.85028	6
7025	3.84665	6	7055	3.84850	6	7085	3.85034	6
7026	3.84671	6	7056	3.84856	6	7086	3.85040	6
7027	3.84677	6	7057	3.84862	6	7087	3.85046	6
7028	3.84683	6	7058	3.84868	6	7088	3.85052	6
7029	3.84689	7	7059	3.84874	6	7089	3.85058	6
7030	3.84696	6	7060	3.84880	6	7090	3.85065	7
7031	3.84702	6	7061	3.84887	7	7091	3.85071	6
7032	3.84708	6	7062	3.84893	6	7092	3.85077	6
7033	3.84714	6	7063	3.84899	6	7093	3.85083	6
7034	3.84720	6	7064	3.84905	6	7094	3.85089	6
7035	3.84726	7	7065	3.84911	6	7095	3.85095	6
7036	3.84733	6	7066	3.84917	7	7096	3.85101	6
7037	3.84739	6	7067	3.84924	6	7097	3.85107	7
7038	3.84745	6	6068	3.84930	6	7098	3.85114	6
7039	3.84751	6	6069	3.84936	6	7099	3.85120	6
7040	3.84757	6	6070	3.84942	6	7100	3.85126	6
7041	3.84763	7	7071	3.84948	6	7101	3.85132	6
7042	3.84770	6	7072	3.84954	6	7102	3.85138	6
7043	3.84776	6	7073	3.84960	6	7103	3.85144	6
7044	3.84782	6	7074	3.84967	7	7104	3.85150	6
7045	3.84788	6	7075	3.84973	6	7105	3.85156	6
7046	3.84794	6	7076	3.84979	6	7106	3.85163	7
7047	3.84800	6	7077	3.84985	6	7107	3.85169	6
7048	3.84807	7	7078	3.84991	6	7108	3.85175	6
7049	3.84813	6	7079	3.84997	6	7109	3.85181	6
7050	3.84819	6	7080	3.85003	6	7110	3.85187	6



Nomb.	1.58'30	D.	Nomb.	1.59'0	D.	Nomb.	1.59'30	D.
	Logarit.			Logarit.			Logarit.	
7110	3.85187	6	7140	3.85370	6	2170	3.85552	6
7111	3.85193	6	7141	3.85376	6	7171	3.85558	6
7112	3.85199	6	7142	3.85382	6	7172	3.85564	6
7113	3.85205	6	7143	3.85388	6	7173	3.85570	6
7114	3.85211	6	7144	3.85394	6	7174	3.85576	6
7115	3.85217	7	7145	3.85400	6	7175	3.85582	6
7116	3.85224	6	7146	3.85406	6	7176	3.85588	6
7117	3.85230	6	7147	3.85412	6	7177	3.85594	6
7118	3.85236	6	7148	3.85418	7	7178	3.85600	6
7119	3.85242	6	7149	3.85425	6	7179	3.85606	6
7120	3.85248	6	7150	3.85431	6	7180	3.85612	6
7121	3.85254	6	7151	3.85437	6	7181	3.85618	6
7122	3.85260	6	7152	3.85443	6	7182	3.85625	6
7123	3.85266	6	7153	3.85449	6	7183	3.85631	6
7124	3.85272	6	7154	3.85455	6	7184	3.85637	6
7125	3.85278	7	7155	3.85461	6	7185	3.85643	6
7126	3.85285	6	7156	3.85467	6	7186	3.85649	6
7127	3.85291	6	7157	3.85473	6	7187	3.85655	6
7128	3.85297	6	7158	3.85479	6	7188	3.85661	6
7129	3.85303	6	7159	3.85485	6	7189	3.85667	6
7130	3.85309	6	7160	3.85491	6	2190	3.85673	6
7131	3.85315	6	7161	3.85497	6	7191	3.85679	6
7132	3.85321	6	7162	3.85503	6	7192	3.85685	6
7133	3.85327	6	7163	3.85509	7	7193	3.85691	6
7134	3.85333	6	7164	3.85516	6	7194	3.85697	6
7135	3.85339	6	7165	3.85522	6	7195	3.85703	6
7136	3.85345	6	7166	3.85528	6	7196	3.85709	6
7137	3.85352	7	7167	3.85534	6	7197	3.85715	6
7138	3.85358	6	7168	3.85540	6	7198	3.85721	6
7139	3.85364	6	7169	3.85546	6	7199	3.85727	6
7140	3.85370	6	7170	3.85552	6	7200	3.85733	6



Nomb.	2. 0' 0"	D.	Nomb.	2. 0' 30"	D.	Nomb.	2. 1' 0"	D.
	Logarit.			Logarit.			Logarit.	
7200	3.85733	6	7230	3.85914	6	7260	3.86094	6
7201	3.85739	6	7231	3.85920	6	7261	3.86100	6
7202	3.85745	6	7132	3.85926	6	7262	3.86106	6
7203	3.85751	6	7233	3.85932	6	7263	3.86112	6
7204	3.85757	6	7234	3.85938	6	7264	3.86118	6
7205	3.85763	6	7235	3.85944	6	7265	3.86124	6
7206	3.85769	6	7236	3.85950	6	7266	3.86130	6
7207	3.85775	6	7237	3.85956	6	7267	3.86136	5
7208	3.85781	7	7238	3.85962	6	7268	3.86141	6
7209	3.85788	6	7239	3.85968	6	7269	3.86147	6
7210	3.85794	6	7240	3.85974	6	7270	3.86153	6
7211	3.85800	6	7241	3.85980	6	7271	3.86159	6
7212	3.85806	6	7242	3.85986	6	7272	3.86165	6
7213	3.85812	6	7243	3.85992	6	7273	3.86171	6
7214	3.85818	6	7244	3.85998	6	7274	3.86177	6
7215	3.85824	6	7245	3.86004	6	7275	3.86183	6
7216	3.85830	6	7246	3.86010	6	7276	3.86189	6
7217	3.85836	6	7247	3.86016	6	7277	3.86195	6
7218	3.85842	6	7248	3.86022	6	7278	3.86201	6
7219	3.85848	6	7249	3.86028	6	7279	3.86207	6
7220	3.85854	6	7250	3.86034	6	7280	3.86213	6
7221	3.85860	6	7251	3.86040	6	7281	3.86219	6
7222	3.85866	6	7252	3.86046	6	7282	3.86225	6
7223	3.85872	6	7253	3.86052	6	7283	3.86231	6
7224	3.85878	6	7254	3.86058	6	7284	3.86237	6
7225	3.85884	6	7255	3.86064	6	7285	3.86243	6
7226	3.85890	6	7256	3.86070	6	7286	3.86249	6
7227	3.85896	6	7257	3.86076	6	7287	3.86255	6
7228	3.85902	6	7258	3.86082	6	7288	3.86261	6
7229	3.85908	6	7259	3.86088	6	7289	3.86267	6
7230	3.85914	6	7260	3.86094	6	7290	3.86273	6

Nomb.	2. 1' 30"	D.	Nomb.	2. 2' 0"	D.	Nomb.	2. 2' 30"	D.
	Logarit.			Logarit.			Logarit.	
7290	3.86273	6	7320	3.86451	6	7350	3.86639	6
7291	3.86279	6	7321	3.86457	6	7351	3.86635	6
7292	3.86285	6	7322	3.86463	6	7352	3.86641	5
7293	3.86291	6	7323	3.86469	6	7353	3.86646	6
7294	3.86297	6	7324	3.86475	6	7354	3.86652	6
7295	3.86303	5	7325	3.86481	6	7355	3.86658	6
7296	3.86308	6	7326	3.86487	6	7356	3.86664	6
7297	3.86314	6	7327	3.86493	6	7357	3.86670	6
7298	3.86320	6	7328	3.86499	5	7358	3.86676	6
7299	3.86326	6	7329	3.86504	6	7359	3.86682	6
7300	3.86332	6	7330	3.86510	6	7360	3.86688	6
7301	3.86338	6	7331	3.86516	6	7361	3.86694	6
7302	3.86344	6	7332	3.86522	6	7362	3.86700	5
7303	3.86350	6	7333	3.86528	6	7363	3.86705	6
7304	3.86356	6	7334	3.86534	6	7364	3.86711	6
7305	3.86362	6	7335	3.86540	6	7365	3.86717	6
7306	3.86368	6	7336	3.86546	6	7366	3.86723	6
7307	3.86374	6	7337	3.86552	6	7367	3.86729	6
7308	3.86380	6	7338	3.86558	6	7368	3.86735	6
7309	3.86386	6	7339	3.86564	6	7369	3.86741	6
7310	3.86392	6	7340	3.86570	6	7370	3.86747	6
7311	3.86398	6	7341	3.86576	5	7371	3.86753	6
7312	3.86404	6	7342	3.86581	6	7372	3.86759	5
7313	3.86410	5	7343	3.86587	6	7373	3.86764	6
7314	3.86415	6	7344	3.86593	6	7374	3.86770	6
7315	3.86421	6	7345	3.86599	6	7375	3.86776	6
7316	3.86427	6	7346	3.86605	6	7376	3.86782	6
7317	3.86433	6	7347	3.86611	6	7377	3.86788	6
7318	3.86439	6	7348	3.86617	6	7378	3.86794	6
7319	3.86445	6	7349	3.86623	6	7379	3.86800	6
7320	3.86451	6	7350	3.86629	6	7380	3.86806	6

Nomb.	1. 3' 0"	D.	Nomb.	2. 3' 30"	D.	Nomb.	2. 4' 0"	D.
	Logarit.			Logarit.			Logarit.	
7380	3.85806	6	7410	3.86982	6	7440	3.87157	6
7381	3.85812	5	7411	3.86988	6	7441	3.87163	6
7382	3.85817	6	7412	3.86994	5	7442	3.87169	6
7383	3.85823	6	7413	3.86999	6	7443	3.87175	6
7384	3.85829	6	7414	3.87005	6	7444	3.87181	5
7385	3.85835	6	7415	3.87011	6	7445	3.87186	6
7386	3.85841	6	7416	3.87017	5	7446	3.87192	6
7387	3.85847	6	7417	3.87023	6	7447	3.87198	6
7388	3.85853	6	7418	3.87029	6	7448	3.87204	6
7389	3.85859	5	7419	3.87035	5	7449	3.87210	6
7390	3.85864	6	7420	3.87040	6	7450	3.87216	5
7391	3.85870	5	7421	3.87046	6	7451	3.87221	6
7392	3.85876	6	7422	3.87052	6	7452	3.87227	6
7393	3.85882	6	7423	3.87058	6	7453	3.87233	6
7394	3.85888	6	7424	3.87064	6	7454	3.87239	6
7395	3.85894	6	7425	3.87070	5	7455	3.87245	6
7396	3.85900	6	7426	3.87075	6	7456	3.87251	5
7397	3.85906	5	7427	3.87081	6	7457	3.87256	6
7398	3.85911	6	7428	3.87087	6	7458	3.87262	6
7399	3.85917	6	7429	3.87093	6	7459	3.87268	6
7400	3.85923	6	7430	3.87099	6	7460	3.87274	6
7401	3.85929	6	7431	3.87105	6	7461	3.87280	6
7402	3.85935	6	7432	3.87111	5	7462	3.87286	5
7403	3.85941	6	7433	3.87116	6	7463	3.87291	6
7404	3.85947	6	7434	3.87122	6	7464	3.87297	6
7405	3.85953	5	7435	3.87128	6	7465	3.87303	6
7406	3.85958	6	7436	3.87134	6	7466	3.87309	6
7407	3.85964	6	7437	3.87140	6	7467	3.87315	5
7408	3.85970	6	7438	3.87146	5	7468	3.87320	6
7409	3.85976	6	7439	3.87151	6	7469	3.87326	6
7410	3.85982		7440	3.87157		7470	3.87332	



Nomb.	2.4' 30"	D.	Nomb.	2.5' 0"	D.	Nomb.	2.5' 30"	D.
	Logarit.			Logarit.			Logarit.	
7470	3.87332	6	7500	3.87506	6	7530	3.87679	6
7471	3.87338	6	7501	3.87512	6	7531	3.87685	6
7472	3.87344	5	7502	3.87518	5	7532	3.87691	6
7473	3.87349	6	7503	3.87523	6	7533	3.87697	6
7474	3.87355	6	7504	3.87529	6	7534	3.87703	5
7475	3.87361	6	7505	3.87535	6	7535	3.87708	6
7476	3.87367	6	7506	3.87541	6	7536	3.87714	6
7477	3.87373	6	7507	3.87547	5	7537	3.87720	6
7478	3.87379	5	7508	3.87552	6	7538	3.87726	5
7479	3.87384	6	7509	3.87558	6	7539	3.87731	6
7480	3.87390	6	7510	3.87564	6	7540	3.87737	6
7481	3.87396	6	7511	3.87570	6	7541	3.87743	6
7482	3.87402	6	7512	3.87576	5	7542	3.87749	5
7483	3.87408	5	7513	3.87581	6	7543	3.87754	6
7484	3.87413	6	7514	3.87587	6	7544	3.87760	6
7485	3.87419	6	7515	3.87593	6	7545	3.87766	6
7486	3.87425	6	7516	3.87599	5	7546	3.87772	5
7487	3.87431	6	7517	3.87604	6	7547	3.87777	6
7488	3.87437	5	7518	3.87610	6	7548	3.87783	6
7489	3.87442	6	7519	3.87616	6	7549	3.87789	6
7490	3.87448	6	7520	3.87622	6	7550	3.87795	5
7491	3.87454	6	7521	3.87628	5	7551	3.87800	6
7492	3.87460	6	7522	3.87633	6	7552	3.87806	6
7493	3.87466	5	7523	3.87639	6	7553	3.87812	6
7494	3.87471	6	7524	3.87645	5	7554	3.87818	5
7495	3.87477	6	7525	3.87651	6	7555	3.87823	6
7496	3.87483	6	7526	3.87656	6	7556	3.87829	6
7497	3.87489	6	7527	3.87662	6	7557	3.87835	6
7498	3.87495	5	7528	3.87668	6	7558	3.87841	5
7499	3.87500	6	7529	3.87674	6	7559	3.87846	6
7500	3.87506	6	7530	3.87679	5	7560	3.87852	6



Nomb	2. 6' 0"	D.	Nomb	2. 6' 30"	D.	Nomb.	2. 7' 0"	D.
	Logarit.			Logarit.			Logarit.	
7560	3.87852	6	7590	3.88024	6	7620	3.88195	6
7561	3.87858	6	7591	3.88030	6	7621	3.88201	6
7562	3.87864	5	7592	3.88036	5	7622	3.88207	6
7563	3.87869	6	7593	3.88041	6	7623	3.88213	5
7564	3.87875	6	7594	3.88047	6	7624	3.88218	6
7565	3.87881	6	7595	3.88053	5	7625	3.88224	6
7566	3.87887	5	7596	3.88058	6	7626	3.88230	5
7567	3.87892	6	7597	3.88064	6	7627	3.88235	6
7568	3.87898	6	7598	3.88070	6	7628	3.88241	6
7569	3.87904	6	7599	3.88076	5	7629	3.88247	5
7570	3.87910	5	7600	3.88081	6	7630	3.88252	6
7571	3.87915	6	7601	3.88087	6	7631	3.88258	6
7572	3.87921	6	7602	3.88093	5	7632	3.88264	6
7573	3.87927	6	7603	3.88098	6	7633	3.88270	5
7574	3.87933	5	7604	3.88104	6	7634	3.88275	6
7575	3.87938	6	7605	3.88110	6	7635	3.88281	6
7576	3.87944	6	7606	3.88116	5	7636	3.88287	5
7577	3.87950	5	7607	3.88121	6	7637	3.88292	6
7578	3.87955	6	7608	3.88127	6	7638	3.88298	6
7579	3.87961	6	7609	3.88133	5	7639	3.88304	5
7580	3.87967	6	7610	3.88138	6	7640	3.88309	6
7581	3.87973	5	7611	3.88144	6	7641	3.88315	6
7582	3.87978	6	7612	3.88150	6	7642	3.88321	5
7583	3.87984	6	7613	3.88156	5	7643	3.88326	6
7584	3.87990	6	7614	3.88161	6	7644	3.88332	6
7585	3.87996	5	7615	3.88167	6	7645	3.88338	5
7586	3.88001	6	7616	3.88173	5	7646	3.88343	6
7587	3.88007	6	7617	3.88178	6	7647	3.88349	6
7588	3.88013	5	7618	3.88184	6	7648	3.88355	5
7589	3.88018	6	7619	3.88190	5	7649	3.88360	6
7590	3.88024		7620	3.88195		7650	3.88366	

Nomb	2. 7' 30"	D.	Nomb	2. 8' 0"	D.	Nomb	2. 8' 30"	D.
	Logarit			Logarit			Logarit.	
7650	3.88366	6	7680	3.88530	6	7710	3.88705	6
7651	3.88372	5	7681	3.88542	5	7711	3.88711	6
7652	3.88377	6	7682	3.88547	6	7712	3.88717	5
7653	3.88383	6	7683	3.88553	6	7713	3.88722	6
7654	3.88389	6	7684	3.88559	5	7714	3.88728	6
7655	3.88395	5	7685	3.88564	6	7715	3.88734	5
7656	3.88400	6	7686	3.88570	6	7716	3.88739	6
7657	3.88406	6	7687	3.88576	5	7717	3.88745	5
7658	3.88412	5	7688	3.88581	6	7718	3.88750	6
7659	3.88417	6	7689	3.88587	6	7719	3.88756	6
7660	3.88423	6	7690	3.88593	5	7720	3.88762	5
7661	3.88429	5	7691	3.88598	6	7721	3.88767	6
7662	3.88434	6	7692	3.88604	6	7722	3.88773	6
7663	3.88440	6	7693	3.88610	5	7723	3.88779	5
7664	3.88446	5	7694	3.88615	6	7724	3.88784	6
7665	3.88451	6	7695	3.88621	6	7725	3.88790	5
7666	3.88457	6	7696	3.88627	5	7726	3.88795	6
7667	3.88463	5	7697	3.88632	6	7727	3.88801	6
7668	3.88468	6	7698	3.88638	5	7728	3.88807	5
7669	3.88474	6	7699	3.88643	6	7729	3.88812	6
7670	3.88480	5	7700	3.88649	6	7730	3.88818	6
7671	3.88485	6	7701	3.88655	5	7731	3.88824	5
7672	3.88491	6	7702	3.88660	6	7732	3.88829	6
7673	3.88497	5	7703	3.88666	6	7733	3.88835	5
7674	3.88502	6	7704	3.88672	5	7734	3.88840	6
7675	3.88508	5	7705	3.88677	6	7735	3.88846	6
7676	3.88513	6	7706	3.88683	6	7736	3.88852	5
7677	3.88519	6	7707	3.88689	5	7737	3.88857	6
7678	3.88525	5	7708	3.88694	6	7738	3.88863	5
7679	3.88530	6	7709	3.88700	6	7739	3.88868	6
7680	3.88536	6	7710	3.88705	5	7740	3.88874	6

Nomb.	2. 9' 0"	D.	Nomb.	2. 9' 30"	D.	Nomb.	2. 10' 0"	D.
	Logarit.			Logarit.			Logarit.	
7740	3.88874	6	7770	3.89042	6	7800	3.89209	6
7741	3.88880	5	7771	3.89048	5	7801	3.89215	6
7742	3.88885	6	7772	3.89053	6	7802	3.89221	5
7743	3.88891	6	7773	3.89059	5	7803	3.89226	6
7744	3.88897	5	7774	3.89064	6	7804	3.89232	5
7745	3.88902	6	7775	3.89070	6	7805	3.89237	6
7746	3.88908	5	7776	3.89076	5	7806	3.89243	5
7747	3.88913	6	7777	3.89081	6	7807	3.89248	6
7748	3.88919	6	7778	3.89087	5	7808	3.89254	6
7749	3.88925	5	7779	3.89092	6	7809	3.89260	5
7750	3.88930	6	7780	3.89098	6	7810	3.89265	6
7751	3.88936	5	7781	3.89104	5	7811	3.89271	5
7752	3.88941	6	7782	3.89109	6	7812	3.89276	6
7753	3.88947	6	7783	3.89115	5	7813	3.89282	5
7754	3.88953	5	7784	3.89120	6	7814	3.89287	6
7755	3.88958	6	7785	3.89126	5	7815	3.89293	5
7756	3.88964	5	7786	3.89131	6	7816	3.89298	6
7757	3.88969	6	7787	3.89137	6	7817	3.89304	6
7758	3.88975	6	7788	3.89143	5	7818	3.89310	5
7759	3.88981	5	7789	3.89148	6	7819	3.89315	6
7760	3.88986	6	7790	3.89154	5	7820	3.89321	5
7761	3.88992	5	7791	3.89159	6	7821	3.89326	6
7762	3.88997	6	7792	3.89165	5	7822	3.89332	5
7763	3.89003	6	7793	3.89170	6	7823	3.89337	6
7764	3.89009	5	7794	3.89176	6	7824	3.89343	5
7765	3.89014	6	7795	3.89182	5	7825	3.89348	6
7766	3.89020	5	7796	3.89187	6	7826	3.89354	6
7767	3.89025	6	7797	3.89193	5	7827	3.89360	5
7768	3.89031	6	7798	3.89198	6	7828	3.89365	6
7769	3.89037	5	7799	3.89204	5	7829	3.89371	5
7770	3.89042	5	7800	3.89209	5	7830	3.89376	5



Nomb.	2.10'30"	D.	Nomb.	2.11'0"	D.	Nomb.	2.11'30"	D.
	Logarit.			Logarit.			Logarit.	
7830	3.89376	6	7860	3.89542	6	7890	3.89708	5
7831	3.89382	5	7861	3.89548	5	7891	3.89713	6
7832	3.89387	6	7862	3.89553	6	7892	3.89719	5
7833	3.89393	5	7863	3.89559	5	7893	3.89724	6
7834	3.89398	6	7864	3.89564	6	7894	3.89730	5
7835	3.89404	5	7865	3.89570	5	7895	3.89735	6
7836	3.89409	6	7866	3.89575	6	7896	3.89741	5
7837	3.89415	6	7867	3.89581	5	7897	3.89746	6
7838	3.89421	5	7868	3.89586	6	7898	3.89752	5
7839	3.89426	6	7869	3.89592	5	7899	3.89757	6
7840	3.89432	5	7870	3.89597	6	7900	3.89763	5
7841	3.89437	6	7871	3.89603	6	7901	3.89768	6
7842	3.89443	5	7872	3.89609	5	7902	3.89774	5
7843	3.89448	6	7873	3.89614	6	7903	3.89779	6
7844	3.89454	5	7874	3.89620	5	7904	3.89785	5
7845	3.89459	6	7875	3.89625	6	7905	3.89790	6
7846	3.89465	5	7876	3.89631	5	7906	3.89796	5
7847	3.89470	6	7877	3.89636	6	7907	3.89801	6
7848	3.89476	5	7878	3.89642	5	7908	3.89807	5
7849	3.89481	6	7879	3.89647	6	7909	3.89812	6
7850	3.89487	5	7880	3.89653	5	7910	3.89818	5
7851	3.89492	6	7881	3.89658	6	7911	3.89823	6
7852	3.89498	6	7882	3.89664	5	7912	3.89829	5
7853	3.89504	5	7883	3.89669	6	7913	3.89834	6
7854	3.89509	6	7884	3.89675	5	7914	3.89840	5
7855	3.89515	5	7885	3.89680	6	7915	3.89845	6
7856	3.89520	6	7886	3.89686	5	7916	3.89851	5
7857	3.89526	5	7887	3.89691	6	7917	3.89856	6
7858	3.89531	6	7888	3.89697	5	7918	3.89862	5
7859	3.89537	5	7889	3.89702	6	7919	3.89867	6
7860	3.89542	6	7890	3.89708	5	7920	3.89873	5



2. 12' 0"			2. 12' 30"			2. 13' 0"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
7920	3.89875	5	7950	3.90037	5	7980	3.90200	6
7921	3.89878	5	7951	3.90042	6	7981	3.90206	5
7922	3.89883	6	7952	3.90048	5	7982	3.90211	6
7923	3.89889	5	7953	3.90055	6	7983	3.90217	5
7924	3.89894	6	7954	3.90059	5	7984	3.90222	5
7925	3.89900	5	7955	3.90064	5	7985	3.90227	6
7926	3.89905	6	7956	3.90069	6	7986	3.90233	5
7927	3.89911	5	7957	3.90075	5	7987	3.90238	6
7928	3.89916	6	7958	3.90080	6	7988	3.90244	5
7929	3.89922	5	7959	3.90086	5	7989	3.90249	6
7930	3.89927	6	7960	3.90091	6	7990	3.90255	5
7931	3.89933	5	7961	3.90097	5	7991	3.90260	6
7932	3.89938	6	7962	3.90102	6	7992	3.90266	5
7933	3.89944	5	7963	3.90108	5	7993	3.90271	5
7934	3.89949	6	7964	3.90113	6	7994	3.90276	6
7935	3.89955	5	7965	3.90119	5	7995	3.90282	5
7936	3.89960	6	7966	3.90124	5	7996	3.90287	6
7937	3.89966	5	7967	3.90129	6	7997	3.90293	5
7938	3.89971	6	7968	3.90135	5	7998	3.90298	6
7939	3.89977	5	7969	3.90140	6	7999	3.90304	5
7940	3.89982	6	7970	3.90146	5	8000	3.90309	5
7941	3.89988	5	7971	3.90151	6	8001	3.90314	6
7942	3.89993	5	7972	3.90157	5	8002	3.90320	5
7943	3.89998	6	7973	3.90162	6	8003	3.90325	6
7944	3.90004	5	7974	3.90168	5	8004	3.90331	5
7945	3.90009	6	7975	3.90173	6	8005	3.90336	6
7946	3.90015	5	7976	3.90179	5	8006	3.90342	5
7947	3.90020	6	7977	3.90184	5	8007	3.90347	5
7948	3.90026	5	7978	3.90189	6	8008	3.90352	6
7949	3.90031	6	7979	3.90195	5	8009	3.90358	5
7950	3.90037		7980	3.90200		8010	3.90363	5

Nomb.	2. 15' 30"	D.	Nomb.	2. 14' 0"	D.	Nomb.	2. 14' 30"	D.
	Logarit.			Logarit.			Logarit.	
8010	3.90363	6	8040	3.90526	5	8070	3.90687	5
8011	3.90369	5	8041	3.90531	5	8071	3.90693	5
8012	3.90374	6	8042	3.90536	6	8072	3.90698	5
8013	3.90380	5	8043	3.90542	5	8073	3.90703	6
8014	3.90385	5	8044	3.90547	6	8074	3.90709	5
8015	3.90390	6	8045	3.90553	5	8075	3.90714	6
8016	3.90396	5	8046	3.90558	5	8076	3.90720	5
8017	3.90401	6	8047	3.90563	6	8077	3.90725	5
8018	3.90407	5	8048	3.90569	5	8078	3.90730	6
8019	3.90412	5	8049	3.90574	6	8079	3.90736	5
8020	3.90417	6	8050	3.90580	5	8080	3.90741	6
8021	3.90423	5	8051	3.90585	5	8081	3.90747	5
8022	3.90428	6	8052	3.90590	6	8082	3.90752	5
8023	3.90434	5	8053	3.90596	5	8083	3.90757	6
8024	3.90439	6	8054	3.90601	6	8084	3.90763	5
8025	3.90445	5	8055	3.90607	5	8085	3.90768	5
8026	3.90450	5	8056	3.90612	5	8086	3.90773	6
8027	3.90455	6	8057	3.90617	6	8087	3.90779	5
8028	3.90461	5	8058	3.90623	5	8088	3.90784	5
8029	3.90466	6	8059	3.90628	6	8089	3.90789	6
8030	3.90472	5	8060	3.90634	5	8090	3.90795	5
8031	3.90477	5	8061	3.90639	5	8091	3.90800	6
8032	3.90482	6	8062	3.90644	6	8092	3.90806	5
8033	3.90488	5	8063	3.90650	5	8093	3.90811	5
8034	3.90493	6	8064	3.90655	5	8094	3.90816	6
8035	3.90499	5	8065	3.90660	6	8095	3.90822	5
8036	3.90504	5	8066	3.90666	5	8096	3.90827	5
8037	3.90509	6	8067	3.90671	6	8097	3.90832	6
8038	3.90515	5	8068	3.90677	5	8098	3.90838	5
8039	3.90520	6	8069	3.90682	5	8099	3.90843	6
8040	3.90526	5	8070	3.90687	5	8100	3.90849	6

2. 15' 0"			2. 15' 30"			2. 16' 0"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
8100	3.90849	5	8130	3.91009	5	8160	3.91169	5
8101	3.90854	5	8131	3.91014	6	8161	3.91174	6
8102	3.90859	6	8132	3.91020	5	8162	3.91180	5
8103	3.90865	5	8133	3.91025	5	8163	3.91185	5
8104	3.90870	5	8134	3.91030	6	8164	3.91190	6
8105	3.90875	6	8135	3.91036	5	8165	3.91196	5
8106	3.90881	5	8136	3.91041	5	8166	3.91201	5
8107	3.90886	5	8137	3.91046	6	8167	3.91206	6
8108	3.90891	6	8138	3.91052	5	8168	3.91212	5
8109	3.90897	5	8139	3.91057	5	8169	3.91217	5
8110	3.90902	5	8140	3.91062	6	8170	3.91222	6
8111	3.90907	6	8141	3.91068	5	8171	3.91228	5
8112	3.90913	5	8142	3.91073	5	8172	3.91233	5
8113	3.90918	6	8143	3.91078	6	8173	3.91238	5
8114	3.90924	5	8144	3.91084	5	8174	3.91243	6
8115	3.90929	5	8145	3.91089	5	8175	3.91249	5
8116	3.90934	6	8146	3.91094	6	8176	3.91254	5
8117	3.90940	5	8147	3.91100	5	8177	3.91259	6
8118	3.90945	5	8148	3.91105	5	8178	3.91265	5
8119	3.90950	6	8149	3.91110	6	8179	3.91270	5
8120	3.90956	5	8150	3.91116	5	8180	3.91275	6
8121	3.90961	5	8151	3.91121	5	8181	3.91281	5
8122	3.90966	6	8152	3.91126	6	8182	3.91286	5
8123	3.90972	5	8153	3.91132	5	8183	3.91291	6
8124	3.90977	5	8154	3.91137	5	8184	3.91297	5
8125	3.90982	6	8155	3.91142	6	8185	3.91302	5
8126	3.90988	5	8156	3.91148	5	8186	3.91307	5
8127	3.90993	5	8157	3.91153	5	8187	3.91312	6
8128	3.90998	6	8158	3.91158	6	8188	3.91318	5
8129	3.91004	5	8159	3.91164	5	8189	3.91323	5
8130	3.91009	5	8160	3.91169	5	8190	3.91328	5



2.16'50"			2.17'0"			2.17'30"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
8190	3.91328	6	8220	3.91487	5	8250	3.91645	6
8191	3.91334	5	8221	3.91492	6	8251	3.91651	5
8192	3.91339	5	8222	3.91498	5	8252	3.91656	5
8193	3.91344	6	8223	3.91503	5	8253	3.91661	5
8194	3.91350	5	8224	3.91508	6	8254	3.91666	6
8195	3.91355	5	8225	3.91514	5	8255	3.91672	5
8196	3.91360	5	8226	3.91519	5	8256	3.91677	5
8197	3.91365	6	8227	3.91524	5	8257	3.91682	5
8198	3.91371	5	8228	3.91529	6	8258	3.91687	6
8199	3.91376	5	8229	3.91535	5	8259	3.91693	5
8200	3.91381	6	8230	3.91540	5	8260	3.91698	5
8201	3.91387	5	8231	3.91545	6	8261	3.91703	6
8202	3.91392	5	8132	3.91551	5	8262	3.91709	5
8203	3.91397	6	8233	3.91556	5	8263	3.91714	5
8204	3.91403	5	8234	3.91561	5	8264	3.91719	5
8205	3.91408	5	8235	3.91566	6	8265	3.91724	6
8206	3.91415	5	8236	3.91572	5	8266	3.91730	5
8207	3.91418	6	8237	3.91577	5	8267	3.91735	5
8208	3.91424	5	8238	3.91582	5	8268	3.91740	5
8209	3.91429	5	8239	3.91587	6	8269	3.91745	6
8210	3.91434	6	8240	3.91593	5	8270	3.91751	5
8211	3.91440	5	8241	3.91598	5	8271	3.91756	5
8212	3.91445	5	8242	3.91603	6	8272	3.91761	5
8213	3.91450	5	8243	3.91609	5	8273	3.91766	6
8214	3.91455	6	8244	3.91614	5	8274	3.91772	5
8215	3.91461	5	8245	3.91619	5	8275	3.91777	5
8216	3.91466	5	8246	3.91624	6	8276	3.91782	5
8217	3.91471	6	8247	3.91630	5	8277	3.91787	6
8218	3.91477	5	8248	3.91635	5	8278	3.91793	5
8219	3.91482	5	8249	3.91640	5	8279	3.91798	5
8220	3.91487	5	8250	3.91645	5	8280	3.91803	5



Nomb.	2. 18' 0"	D.	Nomb.	2. 18' 30"	D.	Nomb.	2. 19' 0"	D.
	Logarit.			Logarit.			Logarit.	
8280	3.91803	5	8310	3.91960	5	8340	3.92117	5
8281	3.91808	6	8311	3.91965	6	8341	3.92122	5
8282	3.91814	5	8312	3.91971	5	8342	3.92127	5
8283	3.91819	5	8313	3.91976	5	8343	3.92132	5
8284	3.91824	5	8314	3.91981	5	8344	3.92137	6
8285	3.91829	5	8315	3.91986	5	8345	3.92143	5
8286	3.91834	6	8316	3.91991	6	8346	3.92148	5
8287	3.91840	5	8317	3.91997	5	8347	3.92153	5
8288	3.91845	5	8318	3.92002	5	8348	3.92158	5
8289	3.91850	5	8319	3.92007	5	8349	3.92163	6
8290	3.91855	6	8320	3.92012	6	8350	3.92169	5
8291	3.91861	5	8321	3.92018	5	8351	3.92174	5
8292	3.91866	5	8322	3.92023	5	8352	3.92179	5
8293	3.91871	5	8323	3.92028	5	8353	3.92184	5
8294	3.91876	5	8324	3.92033	5	8354	3.92189	6
8295	3.91882	6	8325	3.92038	6	8355	3.92195	5
8296	3.91887	5	8326	3.92044	5	8356	3.92200	5
8297	3.91892	5	8327	3.92049	5	8357	3.92205	5
8298	3.91897	5	8328	3.92054	5	8358	3.92210	5
8299	3.91903	6	8329	3.92059	6	8359	3.92215	6
8300	3.91908	5	8330	3.92065	5	8360	3.92221	5
8301	3.91913	5	8331	3.92070	5	8361	3.92226	5
8302	3.91918	5	8332	3.92075	5	8362	3.92231	5
8303	3.91924	6	8333	3.92080	5	8363	3.92236	5
8304	3.91929	5	8334	3.92085	6	8364	3.92241	6
8305	3.91934	5	8335	3.92091	5	8365	3.92247	5
8306	3.91939	5	8336	3.92096	5	8366	3.92252	5
8307	3.91944	5	8337	3.92101	5	8367	3.92257	5
8308	3.91950	6	8338	3.92106	5	8368	3.92262	5
8309	3.91955	5	8339	3.92111	5	8369	3.92267	6
8310	3.91960	5	8340	3.92117	6	8370	3.92273	

Nomb	2. 19' 30"	D.	Nomb	2. 20' 0"	D.	Nomb	2. 20' 30"	D.
	Logarit.			Logarit.			Logarit.	
8370	3.92275	5	8400	3.92428	5	8430	3.92585	5
8371	3.92278	5	8401	3.92433	5	8431	3.92588	5
8372	3.92283	5	8402	3.92438	5	8432	3.92593	5
8373	3.92288	5	8403	3.92445	6	8433	3.92598	5
8374	3.92293	5	8404	3.92449	5	8434	3.92603	6
8375	3.92298	6	8405	3.92454	5	8435	3.92609	5
8376	3.92304	5	8406	3.92459	5	8436	3.92614	5
8377	3.92309	5	8407	3.92464	5	8437	3.92619	5
8378	3.92314	5	8408	3.92469	5	8438	3.92624	5
8379	3.92319	5	8409	3.92474	6	8439	3.92629	5
8380	3.92324	6	8410	3.92480	5	8440	3.92634	5
8381	3.92330	5	8411	3.92485	5	8441	3.92639	6
8382	3.92335	5	8412	3.92490	5	8442	3.92645	5
8383	3.92340	5	8413	3.92495	5	8443	3.92650	5
8384	3.92345	5	8414	3.92500	5	8444	3.92655	5
8385	3.92350	5	8415	3.92505	6	8445	3.92660	5
8386	3.92355	6	8416	3.92511	5	8446	3.92665	5
8387	3.92361	5	8417	3.92516	5	8447	3.92670	5
8388	3.92366	5	8418	3.92521	5	8448	3.92675	6
8389	3.92371	5	8419	3.92526	5	8449	3.92681	5
8390	3.92376	5	8420	3.92531	5	8450	3.92686	5
8391	3.92381	6	8421	3.92536	6	8451	3.92691	5
8392	3.92387	5	8422	3.92542	5	8452	3.92696	5
8393	3.92392	5	8423	3.92547	5	8453	3.92701	5
8394	3.92397	5	8424	3.92552	5	8454	3.92706	5
8395	3.92402	5	8425	3.92557	5	8455	3.92711	5
8396	3.92407	5	8426	3.92562	5	8456	3.92716	6
8397	3.92412	6	8427	3.92567	5	8457	3.92722	5
8398	3.92418	5	8428	3.92572	6	8458	3.92727	5
8399	3.92423	5	8429	3.92578	5	8459	3.92732	5
8400	3.92428	5	8430	3.92583	5	8460	3.92737	5

Nomb.	2. 21' 0"	D.	Nomb.	2. 21' 30"	D.	Nomb.	2. 22' 0"	D.
	Logarit.			Logarit.			Logarit.	
8460	3.92737	5	8490	3.92891	5	8520	3.93044	5
8461	3.92742	5	8491	3.92896	5	8521	3.93049	5
8462	3.92747	5	8492	3.92901	5	8522	3.93054	5
8463	3.92752	6	8493	3.92906	5	8523	3.93059	5
8464	3.92758	5	8494	3.92911	5	8524	3.93064	5
8465	3.92763	5	8495	3.92916	5	8525	3.93069	6
8466	3.92768	5	8496	3.92921	6	8526	3.93075	5
8467	3.92773	5	8497	3.92927	5	8527	3.93080	5
8468	3.92778	5	8498	3.92932	5	8528	3.93085	5
8469	3.92783	5	8499	3.92937	5	8529	3.93090	5
8470	3.92788	5	8500	3.92942	5	8530	3.93095	5
8471	3.92793	6	8501	3.92947	5	8531	3.93100	5
8472	3.92799	5	8502	3.92952	5	8532	3.93105	5
8473	3.92804	5	8503	3.92957	5	8533	3.93110	5
8474	3.92809	5	8504	3.92962	5	8534	3.93115	5
8475	3.92814	5	8505	3.92967	6	8535	3.93120	5
8476	3.92819	5	8506	3.92973	5	8536	3.93125	6
8477	3.92824	5	8507	3.92978	5	8537	3.93131	5
8478	3.92829	5	8508	3.92983	5	8538	3.93136	5
8479	3.92834	6	8509	3.92988	5	8539	3.93141	5
8480	3.92840	5	8510	3.92993	5	8540	3.93146	5
8481	3.92845	5	8511	3.92998	5	8541	3.93151	5
8482	3.92850	5	8512	3.93003	5	8542	3.93156	5
8483	3.92855	5	8513	3.93008	5	8543	3.93161	5
8484	3.92860	5	8514	3.93013	5	8544	3.93166	5
8485	3.92865	5	8515	3.93018	6	8545	3.93171	5
8486	3.92870	5	8516	3.93024	5	8546	3.93176	5
8487	3.92875	6	8517	3.93029	5	8547	3.93181	5
8488	3.92881	5	8518	3.93034	5	8548	3.93186	6
8489	3.92886	5	8519	3.93039	5	8549	3.93192	5
8490	3.92891		8520	3.93044		8550	3.93197	



Nomb	2.22'30"	D.	Nomb.	2.23'0"	D.	Nomb.	2.23'30"	D.
	Logarit.			Logarit.			Logarit.	
8550	3.93197	5	8580	3.93349	5	8610	3.93500	5
8551	3.93202	5	8581	3.93354	5	8611	3.93505	5
8552	3.93207	5	8582	3.93359	5	8612	3.93510	5
8553	3.93212	5	8583	3.93364	5	8613	3.93515	5
8554	3.93217	5	8584	3.93369	5	8614	3.93520	6
8555	3.93222	5	8585	3.93374	5	8615	3.93526	5
8556	3.93227	5	8586	3.93379	5	8616	3.93531	5
8557	3.93232	5	8587	3.93384	5	8617	3.93536	5
8558	3.93237	5	8588	3.93389	5	8618	3.93541	5
8559	3.93242	5	8589	3.93394	5	8619	3.93546	5
8560	3.93247	5	8590	3.93399	5	8620	3.93551	5
8561	3.93252	6	8591	3.93404	5	8621	3.93556	5
8562	3.93258	5	8592	3.93409	5	8622	3.93561	5
8563	3.93263	5	8593	3.93414	6	8623	3.93566	5
8564	3.93268	5	8594	3.93420	5	8624	3.93571	5
8565	3.93273	5	8595	3.93425	5	8625	3.93576	5
8566	3.93278	5	8596	3.93430	5	8626	3.93581	5
8567	3.93283	5	8597	3.93435	5	8627	3.93586	5
8568	3.93288	5	8598	3.93440	5	8628	3.93591	5
8569	3.93293	5	8599	3.93445	5	8629	3.93596	5
8570	3.93298	5	8600	3.93450	5	8630	3.93601	5
8571	3.93303	5	8601	3.93455	5	8631	3.93606	5
8572	3.93308	5	8602	3.93460	5	8632	3.93611	5
8573	3.93313	5	8603	3.93465	5	8633	3.93616	5
8574	3.93318	5	8604	3.93470	5	8634	3.93621	5
8575	3.93323	5	8605	3.93475	5	8635	3.93626	5
8576	3.93328	6	8606	3.93480	5	8636	3.93631	5
8577	3.93334	5	8607	3.93485	5	8637	3.93636	5
8578	3.93339	5	8608	3.93490	5	8638	3.93641	5
8579	3.93344	5	8609	3.93495	5	8639	3.93646	5
8580	3.93349	5	8610	3.93500	5	8640	3.93651	5



Nomb.	2. 24' 0"	D.	Nomb.	2. 24' 30"	D.	Nomb.	2. 25' 0"	D.
	Logarit.			Logarit.			Logarit.	
8640	3.93651	5	8670	3.93802	5	8700	3.93952	5
8641	3.93656	5	8671	3.93807	5	8701	3.93957	5
8642	3.93661	5	8672	3.93812	5	8702	3.93962	5
8643	3.93666	5	8673	3.93817	5	8703	3.93967	5
8644	3.93671	5	8674	3.93822	5	8704	3.93972	5
8645	3.93676	6	8675	3.93827	5	8705	3.93977	5
8646	3.93682	5	8676	3.93832	5	8706	3.93982	5
8647	3.93687	5	8677	3.93837	5	8707	3.93987	5
8648	3.93692	5	8678	3.93842	5	8708	3.93992	5
8649	3.93697	5	8679	3.93847	5	8709	3.93997	5
8650	3.93702	5	8680	3.93852	5	8710	3.94002	5
8651	3.93707	5	8681	3.93857	5	8711	3.94007	5
8652	3.93712	5	8682	3.93862	5	8712	3.94012	5
8653	3.93717	5	8683	3.93867	5	8713	3.94017	5
8654	3.93722	5	8684	3.93872	5	8714	3.94022	5
8655	3.93727	5	8685	3.93877	5	8715	3.94027	5
8656	3.93732	5	8686	3.93882	5	8716	3.94032	5
8657	3.93737	5	8687	3.93887	5	8717	3.94037	5
8658	3.93742	5	8688	3.93892	5	8718	3.94042	5
8659	3.93747	5	8689	3.93897	5	8719	3.94047	5
8660	3.93752	5	8690	3.93902	5	8720	3.94052	5
8661	3.93757	5	8691	3.93907	5	8721	3.94057	5
8662	3.93762	5	8692	3.93912	5	8722	3.94062	5
8663	3.93767	5	8693	3.93917	5	8723	3.94067	5
8664	3.93772	5	8694	3.93922	5	8724	3.94072	5
8665	3.93777	5	8695	3.93927	5	8725	3.94077	5
8666	3.93782	5	8696	3.93932	5	8726	3.94082	5
8667	3.93787	5	8697	3.93937	5	8727	3.94086	4
8668	3.93792	5	8698	3.93942	5	8728	3.94091	5
8669	3.93797	5	8699	3.93947	5	8729	3.94096	5
8670	3.93802	5	8700	3.93952	5	8730	3.94101	5

Nomb.	2.25'30"	D.	Nomb.	2.26'0"	D.	Nomb.	2.26'50"	D.
	Logarit.			Logarit.			Logarit.	
8730	3.94101	5	8760	3.94250	5	8790	3.94399	5
8731	3.94106	5	8761	3.94255	5	8791	3.94404	5
8732	3.94111	5	8762	3.94260	5	8792	3.94409	5
8733	3.94116	5	8763	3.94265	5	8793	3.94414	5
8734	3.94121	5	8764	3.94270	5	8794	3.94419	5
8735	3.94126	5	8765	3.94275	5	8795	3.94424	5
8736	3.94131	5	8766	3.94280	5	8796	3.94429	4
8737	3.94136	5	8767	3.94285	5	8797	3.94433	5
8738	3.94141	5	8768	3.94290	5	8798	3.94438	5
8739	3.94146	5	8769	3.94295	5	8799	3.94443	5
8740	3.94151	5	8770	3.94300	5	8800	3.94448	5
8741	3.94156	5	8771	3.94305	5	8801	3.94453	5
8742	3.94161	5	8772	3.94310	5	8802	3.94458	5
8743	3.94166	5	8773	3.94315	5	8803	3.94463	5
8744	3.94171	5	8774	3.94320	5	8804	3.94468	5
8745	3.94176	5	8775	3.94325	5	8805	3.94473	5
8746	3.94181	5	8776	3.94330	5	8806	3.94478	5
8747	3.94186	5	8777	3.94335	5	8807	3.94483	5
8748	3.94191	5	8778	3.94340	5	8808	3.94488	5
8749	3.94196	5	8779	3.94345	4	8809	3.94493	5
8750	3.94201	5	8780	3.94349	5	8810	3.94498	5
8751	3.94206	5	8781	3.94354	5	8811	3.94503	4
8752	3.94211	5	8782	3.94359	5	8812	3.94507	5
8753	3.94216	5	8783	3.94364	5	8813	3.94512	5
8754	3.94221	5	8784	3.94369	5	8814	3.94517	5
8755	3.94226	5	8785	3.94374	5	8815	3.94522	5
8756	3.94231	5	8786	3.94379	5	8816	3.94527	5
8757	3.94236	4	8787	3.94384	5	8817	3.94532	5
8758	3.94240	5	8788	3.94389	5	8818	3.94537	5
8759	3.94245	5	8789	3.94394	5	8819	3.94542	5
8760	3.94250	5	8790	3.94399	5	8820	3.94547	5

Nomb.	2. 27' 0"	D.	Nomb.	2. 27' 30"	D.	Nomb.	2. 28' 0"	D.
	Logarit.			Logarit.			Logarit.	
8820	3.94547	5	8850	3.94694	5	8880	3.94841	5
8821	3.94552	5	8851	3.94699	5	8881	3.94846	5
8822	3.94557	5	8852	3.94704	5	8882	3.94851	5
8823	3.94562	5	8853	3.94709	5	8883	3.94856	5
8824	3.94567	4	8854	3.94714	5	8884	3.94861	5
8825	3.94571	5	8855	3.94719	5	8885	3.94866	5
8826	3.94576	5	8856	3.94724	5	8886	3.94871	5
8827	3.94581	5	8857	3.94729	5	8887	3.94876	5
8828	3.94586	5	8858	3.94734	4	8888	3.94880	4
8829	3.94591	5	8859	3.94738	5	8889	3.94885	5
8830	3.94596	5	8860	3.94743	5	8890	3.94890	5
8831	3.94601	5	8861	3.94748	5	8891	3.94895	5
8832	3.94606	5	8862	3.94753	5	8892	3.94900	5
8833	3.94611	5	8863	3.94758	5	8893	3.94905	5
8834	3.94616	5	8864	3.94763	5	8894	3.94910	5
8835	3.94621	5	8865	3.94768	5	8895	3.94915	4
8836	3.94626	4	8866	3.94773	5	8896	3.94919	5
8837	3.94630	5	8867	3.94778	5	8897	3.94924	5
8838	3.94635	5	8868	3.94783	4	8898	3.94929	5
8839	3.94640	5	8869	3.94787	5	8899	3.94934	5
8840	3.94645	5	8870	3.94792	5	8900	3.94939	5
8841	3.94650	5	8871	3.94797	5	8901	3.94944	5
8842	3.94655	5	8872	3.94802	5	8902	3.94949	5
8843	3.94660	5	8873	3.94807	5	8903	3.94954	5
8844	3.94665	5	8874	3.94812	5	8904	3.94959	4
8845	3.94670	5	8875	3.94817	5	8905	3.94963	5
8846	3.94675	5	8876	3.94822	5	8906	3.94968	5
8847	3.94680	5	8877	3.94827	5	8907	3.94973	5
8848	3.94685	4	8878	3.94832	4	8908	3.94978	5
8849	3.94689	5	8879	3.94836	4	8909	3.94983	5
8850	3.94694	5	8880	3.94841	5	8910	3.94988	5



2.28'30"			2.29' 0"			2.29'30"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
8910	3.94988	5	8940	3.95134	5	8970	3.95279	5
8911	3.94993	5	8941	3.95139	4	8971	3.95284	5
8912	3.94998	4	8942	3.95143	5	8972	3.95289	5
8913	3.95002	5	8943	3.95148	5	8973	3.95294	5
8914	3.95007	5	8944	3.95153	5	8974	3.95299	5
8915	3.95012	5	8945	3.95158	5	8975	3.95303	5
8916	3.95017	5	8946	3.95163	5	8976	3.95308	5
8917	3.95022	5	8947	3.95168	5	8977	3.95313	5
8918	3.95027	5	8948	3.95173	4	8978	3.95318	5
8919	3.95032	4	8949	3.95177	5	8979	3.95323	5
8920	3.95036	5	8950	3.95182	5	8980	3.95328	5
8921	3.95041	5	8951	3.95187	5	8981	3.95332	5
8922	3.95046	5	8952	3.95192	5	8982	3.95337	5
8923	3.95051	5	8953	3.95197	5	8983	3.95342	5
8924	3.95056	5	8954	3.95202	5	8984	3.95347	5
8925	3.95061	5	8955	3.95207	4	8985	3.95352	5
8926	3.95066	5	8956	3.95211	5	8986	3.95357	4
8927	3.95071	4	8957	3.95216	5	8987	3.95361	5
8928	3.95075	5	8958	3.95221	5	8988	3.95366	5
8929	3.95080	5	8959	3.95226	5	8989	3.95371	5
8930	3.95085	5	8960	3.95231	5	8990	3.95376	5
8931	3.95090	5	8961	3.95236	4	8991	3.95381	5
8932	3.95095	5	8962	3.95240	5	8992	3.95386	5
8933	3.95100	5	8963	3.95245	5	8993	3.95390	4
8934	3.95105	4	8964	3.95250	5	8994	3.95395	5
8935	3.95109	5	8965	3.95255	5	8995	3.95400	5
8936	3.95114	5	8966	3.95260	5	8996	3.95405	5
8937	3.95119	5	8967	3.95265	5	8997	3.95410	5
8938	3.95124	5	8968	3.95270	4	8998	3.95415	4
8939	3.95129	5	8969	3.95274	5	8999	3.95419	4
8940	3.95134	5	8970	3.95279	5	9000	3.95424	5



2. 30' 0"			2. 30' 30"			2. 31' 0"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
9000	3.95424	5	9030	3.95569	5	9060	3.95713	5
9001	3.95429	5	9031	3.95574	4	9061	3.95718	4
9002	3.95434	5	9032	3.95578	5	9062	3.95722	5
9003	3.95439	5	9033	3.95583	5	9063	3.95727	5
9004	3.95444	4	9034	3.95588	5	9064	3.95732	5
9005	3.95448	5	9035	3.95593	5	9065	3.95737	5
9006	3.95455	5	9036	3.95598	4	9066	3.95742	4
9007	3.95458	5	9037	3.95602	5	9067	3.95746	5
9008	3.95463	5	9038	3.95607	5	9068	3.95751	5
9009	3.95468	4	9039	3.95612	5	9069	3.95756	5
9010	3.95472	5	9040	3.95617	5	9070	3.95761	5
9011	3.95477	5	9041	3.95622	4	9071	3.95766	4
9012	3.95482	5	9042	3.95626	5	9072	3.95770	5
9013	3.95487	5	9043	3.95631	5	9073	3.95775	5
9014	3.95492	5	9044	3.95636	5	9074	3.95780	5
9015	3.95497	4	9045	3.95641	5	9075	3.95785	4
9016	3.95501	5	9046	3.95646	4	9076	3.95789	5
9017	3.95506	5	9047	3.95650	5	9077	3.95794	5
9018	3.95511	5	9048	3.95655	5	9078	3.95799	5
9019	3.95516	5	9049	3.95660	5	9079	3.95804	5
9020	3.95521	4	9050	3.95665	5	9080	3.95809	4
9021	3.95525	5	9051	3.95670	4	9081	3.95813	5
9022	3.95530	5	9052	3.95674	5	9082	3.95818	5
9023	3.95535	5	9053	3.95679	5	9083	3.95823	5
9024	3.95540	5	9054	3.95684	5	9084	3.95828	4
9025	3.95545	5	9055	3.95689	5	9085	3.95832	5
9026	3.95550	4	9056	3.95694	4	9086	3.95837	5
9027	3.95554	5	9057	3.95698	5	9087	3.95842	5
9028	3.95559	5	9058	3.95703	5	9088	3.95847	5
9029	3.95564	5	9059	3.95708	5	9089	3.95852	4
9030	3.95569		9060	3.95713		9090	3.95856	

Nomb	2.31'30"	D.	Nomb.	2.32'0"	D.	Nomb.	2.32'30	D.
	Logarit.			Logarit.			Logarit	
9090	3.95856	5	9120	3.95999	5	9150	3.96142	5
9091	3.95861	5	9121	3.96004	5	9151	3.96147	5
9092	3.95866	5	9122	3.96009	5	9152	3.96152	4
9093	3.95871	4	9123	3.96014	5	9153	3.96156	5
9094	3.95875	5	9124	3.96019	4	9154	3.96161	5
9095	3.95880	5	9125	3.96023	5	9155	3.96166	5
9096	3.95885	5	9126	3.96028	5	9156	3.96171	4
9097	3.95890	5	9127	3.96033	5	9157	3.96175	5
9098	3.95895	4	9128	3.96038	4	9158	3.96180	5
9099	3.95899	5	9129	3.96042	5	9159	3.96185	5
9100	3.95904	5	9130	3.96047	5	9160	3.96190	4
9101	3.95909	5	9131	3.96052	5	9161	3.96194	5
9102	3.95914	4	9132	3.96057	4	9162	3.96199	5
9103	3.95918	5	9133	3.96061	5	9163	3.96204	5
9104	3.95923	5	9134	3.96066	5	9164	3.96209	4
9105	3.95928	5	9135	3.96071	5	9165	3.96213	5
9106	3.95933	5	9136	3.96076	4	9166	3.96218	5
9107	3.95938	4	9137	3.96080	5	9167	3.96223	4
9108	3.95942	5	9138	3.96085	5	9168	3.96227	5
9109	3.95947	5	9139	3.96090	5	9169	3.96232	5
9110	3.95952	5	9140	3.96095	4	9170	3.96237	5
9111	3.95957	4	9141	3.96099	5	9171	3.96242	4
9112	3.95961	5	9142	3.96104	5	9172	3.96246	5
9113	3.95966	5	9143	3.96109	5	9173	3.96251	5
9114	3.95971	5	9144	3.96114	4	9174	3.96256	5
9115	3.95976	4	9145	3.96118	5	9175	3.96261	4
9116	3.95980	5	9146	3.96123	5	9176	3.96265	5
9117	3.95985	5	9147	3.96128	5	9177	3.96270	5
9118	3.95990	5	9148	3.96133	4	9178	3.96275	5
9119	3.95995	4	9149	3.96137	5	9179	3.96280	4
9120	3.95999	4	9150	3.96142	5	9180	3.96284	4

2. 33' 0"			2. 33' 30"			2. 34' 0"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
9180	3.96284	5	9210	3.96426	5	9240	3.96567	5
9181	3.96289	5	9211	3.96431	4	9241	3.96572	5
9182	3.96294	4	9212	3.96435	5	9242	3.96577	4
9183	3.96298	5	9213	3.96440	5	9243	3.96581	5
9184	3.96303	5	9214	3.96445	5	9244	3.96586	5
9185	3.96308	5	9215	3.96450	4	9245	3.96591	4
9186	3.96313	4	9216	3.96454	5	9246	3.96595	5
9187	3.96317	5	9217	3.96459	5	9247	3.96600	5
9188	3.96322	5	9218	3.96464	4	9248	3.96605	4
9189	3.96327	5	9219	3.96468	5	9249	3.96609	5
9190	3.96332	4	9220	3.96473	5	9250	3.96614	5
9191	3.96336	5	9221	3.96478	5	9251	3.96619	5
9192	3.96341	5	9222	3.96483	5	9252	3.96624	4
9193	3.96346	4	9223	3.96487	5	9253	3.96628	5
9194	3.96350	5	9224	3.96492	5	9254	3.96633	5
9195	3.96355	5	9225	3.96497	4	9255	3.96638	4
9196	3.96360	5	9226	3.96501	5	9256	3.96642	5
9197	3.96365	4	9227	3.96506	5	9257	3.96647	5
9198	3.96369	5	9228	3.96511	4	9258	3.96652	4
9199	3.96374	5	9229	3.96515	5	9259	3.96656	5
9200	3.96379	5	9230	3.96520	5	9260	3.96661	5
9201	3.96384	4	9231	3.96525	5	9261	3.96666	4
9202	3.96388	5	9232	3.96530	4	9262	3.96670	5
9203	3.96393	5	9233	3.96534	5	9263	3.96675	5
9204	3.96398	4	9234	3.96539	5	9264	3.96680	5
9205	3.96402	5	9235	3.96544	4	9265	3.96685	4
9206	3.96407	5	9236	3.96548	5	9266	3.96689	5
9207	3.96412	5	9237	3.96553	5	9267	3.96694	5
9208	3.96417	4	9238	3.96558	4	9268	3.96699	4
9209	3.96421	5	9239	3.96562	5	9269	3.96703	5
9210	3.96426		9240	3.96567		9270	3.96708	



2.34'30"			2.35'0"			2.35'30"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
9270	3.96708	5	9300	3.96848	5	9330	3.96988	5
9271	3.96713	4	9301	3.96853	5	9331	3.96993	4
9272	3.96717	5	9302	3.96858	4	9332	3.96997	5
9273	3.96722	5	9303	3.96862	5	9333	3.97002	5
9274	3.96727	4	9304	3.96867	5	9334	3.97007	4
9275	3.96731	5	9305	3.96872	4	9335	3.97011	5
9276	3.96736	5	9306	3.96876	5	9336	3.97016	5
9277	3.96741	4	9307	3.96881	5	9337	3.97021	4
9278	3.96745	5	9308	3.96886	4	9338	3.97025	5
9279	3.96750	5	9309	3.96890	5	9339	3.97030	5
9280	3.96755	4	9310	3.96895	5	9340	3.97035	4
9281	3.96759	5	9311	3.96900	4	9341	3.97039	5
9282	3.96764	5	9312	3.96904	5	9342	3.97044	5
9283	3.96769	5	9313	3.96909	5	9343	3.97049	4
9284	3.96774	4	9314	3.96914	4	9344	3.97053	5
9285	3.96778	5	9315	3.96918	5	9345	3.97058	5
9286	3.96783	5	9316	3.96923	5	9346	3.97063	4
9287	3.96788	4	9317	3.96928	4	9347	3.97067	5
9288	3.96792	5	9318	3.96932	5	9348	3.97072	5
9289	3.96797	5	9319	3.96937	5	9349	3.97077	4
9290	3.96802	4	9320	3.96942	4	9350	3.97081	5
9291	3.96806	5	9321	3.96946	5	9351	3.97086	4
9292	3.96811	5	9322	3.96951	5	9352	3.97090	5
9293	3.96816	4	9323	3.96956	4	9353	3.97095	5
9294	3.96820	5	9324	3.96960	5	9354	3.97100	4
9295	3.96825	5	9325	3.96965	5	9355	3.97104	5
9296	3.96830	4	9326	3.96970	4	9356	3.97109	5
9297	3.96834	5	9327	3.96974	5	9357	3.97114	4
9298	3.96839	5	9328	3.96979	5	9358	3.97118	5
9299	3.96844	4	9329	3.96984	4	9359	3.97123	5
9300	3.96848		9330	3.96988		9360	3.97128	



2. 36' 0"			2. 36' 30"			2. 37' 0"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
9360	3.97128	4	9390	3.97267	4	9420	3.97405	5
9361	3.97132	5	9391	3.97271	5	9421	3.97410	4
9362	3.97137	5	9392	3.97276	4	9422	3.97414	5
9363	3.97142	4	9393	3.97280	5	9423	3.97419	5
9364	3.97146	5	9394	3.97285	5	9424	3.97424	4
9365	3.97151	4	9395	3.97290	4	9425	3.97428	5
9366	3.97155	5	9396	3.97294	5	9426	3.97433	4
9367	3.97160	5	9397	3.97299	5	9427	3.97437	5
9368	3.97165	4	9398	3.97304	4	9428	3.97442	5
9369	3.97169	5	9399	3.97308	5	9429	3.97447	4
9370	3.97174	5	9400	3.97313	4	9430	3.97451	5
9371	3.97179	4	9401	3.97317	5	9431	3.97456	4
9372	3.97183	5	9402	3.97322	5	9432	3.97460	5
9373	3.97188	4	9403	3.97327	4	9433	3.97465	5
9374	3.97192	5	9404	3.97331	5	9434	3.97470	4
9375	3.97197	5	9405	3.97336	4	9435	3.97474	5
9376	3.97202	4	9406	3.97340	5	9436	3.97479	4
9377	3.97206	5	9407	3.97345	5	9437	3.97483	5
9378	3.97211	5	9408	3.97350	4	9438	3.97488	5
9379	3.97216	4	9409	3.97354	5	9439	3.97493	4
9380	3.97220	5	9410	3.97359	5	9440	3.97497	5
9381	3.97225	5	9411	3.97364	4	9441	3.97502	4
9382	3.97230	4	9412	3.97368	5	9442	3.97506	5
9383	3.97234	5	9413	3.97373	4	9443	3.97511	5
9384	3.97239	4	9414	3.97377	5	9444	3.97516	4
9385	3.97243	5	9415	3.97382	5	9445	3.97520	5
9386	3.97248	5	9416	3.97387	4	9446	3.97525	4
9387	3.97253	4	9417	3.97391	5	9447	3.97529	5
9388	3.97257	5	9418	3.97396	4	9448	3.97534	5
9389	3.97262	5	9419	3.97400	5	9449	3.97539	4
9390	3.97267		9420	3.97405		9450	3.97543	

2. 37' 30"			2. 38' 0"			2. 38' 50"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
9450	3.97545	5	9480	3.97681		9510	3.97818	5
9451	3.97548	4	9481	3.97685	4	9511	3.97823	4
9452	3.97552	5	9482	3.97690	5	9512	3.97827	5
9453	3.97557	5	9483	3.97695	5	9513	3.97832	4
9454	3.97562	4	9484	3.97699	4	9514	3.97836	5
9455	3.97566	5	9485	3.97704	5	9515	3.97841	4
9456	3.97571	4	9486	3.97708	4	9516	3.97845	5
9457	3.97575	5	9487	3.97713	5	9517	3.97850	5
9458	3.97580	5	9488	3.97717	4	9518	3.97855	4
9459	3.97585	4	9489	3.97722	5	9519	3.97859	5
9460	3.97589	5	9490	3.97727	5	9520	3.97864	4
9461	3.97594	4	9491	3.97731	4	9521	3.97868	5
9462	3.97598	5	9492	3.97736	5	9522	3.97873	4
9463	3.97603	4	9493	3.97740	4	9523	3.97877	5
9464	3.97607	5	9494	3.97745	5	9524	3.97882	4
9465	3.97612	5	9495	3.97749	4	9525	3.97886	5
9466	3.97617	5	9496	3.97754	5	9526	3.97891	5
9467	3.97621	4	9497	3.97759	5	9527	3.97896	4
9468	3.97626	5	9498	3.97763	4	9528	3.97900	5
9469	3.97630	4	9499	3.97768	5	9529	3.97905	5
9470	3.97635	5	9500	3.97772	4	9530	3.97909	4
9471	3.97640	5	9501	3.97777	5	9531	3.97914	5
9472	3.97644	4	9502	3.97782	5	9532	3.97918	4
9473	3.97649	5	9503	3.97786	4	9533	3.97923	5
9474	3.97653	4	9504	3.97791	5	9534	3.97928	4
9475	3.97658	5	9505	3.97795	4	9535	3.97932	5
9476	3.97663	5	9506	3.97800	5	9536	3.97937	4
9477	3.97667	4	9507	3.97804	4	9537	3.97941	5
9478	3.97672	5	9508	3.97809	5	9538	3.97946	4
9479	3.97676	4	9509	3.97813	4	9539	3.97950	5
9480	3.97681	5	9510	3.97818	5	9540	3.97955	

1. 39' 0"			2. 39' 30"			3. 40' 0"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
9540	3.97955	4	9570	3.98091	5	9600	3.98227	5
9541	3.97959	5	9571	3.98096	4	9601	3.98232	4
9542	3.97964	4	9572	3.98100	5	9602	3.98236	5
9543	3.97968	5	9573	3.98105	4	9603	3.98241	4
9544	3.97973	5	9574	3.98109	5	9604	3.98245	5
9545	3.97978	4	9575	3.98114	4	9605	3.98250	4
9546	3.97982	5	9576	3.98118	5	9606	3.98254	5
9547	3.97987	4	9577	3.98123	4	9607	3.98259	4
9548	3.97991	5	9578	3.98127	5	9608	3.98263	5
9549	3.97996	4	9579	3.98132	5	9609	3.98268	4
9550	3.98000	5	9580	3.98137	4	9610	3.98272	5
9551	3.98005	4	9581	3.98141	5	9611	3.98277	4
9552	3.98009	5	9582	3.98146	4	9612	3.98281	5
9553	3.98014	5	9583	3.98150	5	9613	3.98286	4
9554	3.98019	4	9584	3.98155	4	9614	3.98290	5
9555	3.98023	5	9585	3.98159	5	9615	3.98295	4
9556	3.98028	4	9586	3.98164	4	9616	3.98299	5
9557	3.98032	5	9587	3.98168	5	9617	3.98304	4
9558	3.98037	4	9588	3.98173	4	9618	3.98308	5
9559	3.98041	5	9589	3.98177	5	9619	3.98313	5
9560	3.98046	4	9590	3.98182	4	9620	3.98318	4
9561	3.98050	5	9591	3.98186	5	9621	3.98322	5
9562	3.98055	4	9592	3.98191	4	9622	3.98327	4
9563	3.98059	5	9593	3.98195	5	9623	3.98331	5
9564	3.98064	4	9594	3.98200	4	9624	3.98336	4
9565	3.98068	5	9595	3.98204	5	9625	3.98340	5
9566	3.98073	5	9596	3.98209	5	9626	3.98345	4
9567	3.98078	4	9597	3.98214	4	9627	3.98349	5
9568	3.98082	5	9598	3.98218	5	9628	3.98354	4
9569	3.98087	4	9599	3.98223	4	9629	3.98358	5
9570	3.98091	4	9600	3.98227	4	9630	3.98363	5



Nomb.	2. 40' 30"	D.	Nomb.	2. 41' 0"	D.	Nomb.	2. 41' 30"	D.
	Logarit.			Logarit.			Logarit.	
9630	3.98363	4	9660	3.98498	4	9690	3.98632	5
9631	3.98367	5	9661	3.98502	5	9691	3.98637	4
9632	3.98372	4	9662	3.98507	5	9692	3.98641	5
9633	3.98376	5	9663	3.98511	4	9693	3.98646	4
9634	3.98381	4	9664	3.98516	5	9694	3.98650	5
9635	3.98385	5	9665	3.98520	4	9695	3.98655	4
9636	3.98390	4	9666	3.98525	5	9696	3.98659	5
9637	3.98394	5	9667	3.98529	4	9697	3.98664	4
9638	3.98399	4	9668	3.98534	5	9698	3.98668	5
9639	3.98403	5	9669	3.98538	4	9699	3.98673	4
9640	3.98408	4	9670	3.98543	5	9700	3.98677	5
9641	3.98412	5	9671	3.98547	4	9701	3.98682	4
9642	3.98417	4	9672	3.98552	5	9702	3.98686	5
9643	3.98421	5	9673	3.98556	4	9703	3.98691	4
9644	3.98426	4	9674	3.98561	5	9704	3.98695	5
9645	3.98430	5	9675	3.98565	4	9705	3.98700	4
9646	3.98435	4	9676	3.98570	5	9706	3.98704	5
9647	3.98439	5	9677	3.98574	4	9707	3.98709	4
9648	3.98444	4	9678	3.98579	5	9708	3.98713	5
9649	3.98448	5	9679	3.98583	4	9709	3.98717	4
9650	3.98453	4	9680	3.98588	5	9710	3.98722	5
9651	3.98457	5	9681	3.98592	4	9711	3.98726	4
9652	3.98462	4	9682	3.98597	5	9712	3.98731	5
9653	3.98466	5	9683	3.98601	4	9713	3.98735	4
9654	3.98471	4	9684	3.98605	5	9714	3.98740	5
9655	3.98475	5	9685	3.98610	4	9715	3.98744	4
9656	3.98480	4	9686	3.98614	5	9716	3.98749	5
9657	3.98484	5	9687	3.98619	4	9717	3.98753	4
9658	3.98489	4	9688	3.98623	5	9718	3.98758	5
9659	3.98493	5	9689	3.98628	4	9719	3.98762	4
9660	3.98498	4	9690	3.98632	5	9720	3.98767	5



2. 42' 0"			2. 42' 30"			2. 43' 0"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
9720	3.98767	4	9750	3.98900	5	9780	3.99034	4
9721	3.98771	5	9751	3.98905	4	9781	3.99038	5
9722	3.98776	4	9752	3.98909	5	9782	3.99043	4
9723	3.98780	4	9753	3.98914	4	9783	3.99047	5
9724	3.98784	5	9754	3.98918	5	9784	3.99052	4
9725	3.98789	4	9755	3.98923	4	9785	3.99056	5
9726	3.98793	5	9756	3.98927	5	9786	3.99061	4
9727	3.98798	4	9757	3.98932	4	9787	3.99065	4
9728	3.98802	5	9758	3.98936	5	9788	3.99069	5
9729	3.98807	4	9759	3.98941	4	9789	3.99074	4
9730	3.98811	5	9760	3.98945	4	9790	3.99078	5
9731	3.98816	4	9761	3.98949	5	9791	3.99083	4
9732	3.98820	5	9762	3.98954	4	9792	3.99087	5
9733	3.98825	4	9763	3.98958	5	9793	3.99092	4
9734	3.98829	5	9764	3.98963	4	9794	3.99096	4
9735	3.98834	4	9765	3.98967	5	9795	3.99100	5
9736	3.98838	5	9766	3.98972	4	9796	3.99105	4
9737	3.98843	4	9767	3.98976	5	9797	3.99109	5
9738	3.98847	4	9768	3.98981	4	9798	3.99114	4
9739	3.98851	5	9769	3.98985	4	9799	3.99118	5
9740	3.98856	4	9770	3.98989	5	9800	3.99123	4
9741	3.98860	5	9771	3.98994	4	9801	3.99127	4
9742	3.98865	4	9772	3.98998	5	9802	3.99131	5
9743	3.98869	5	9773	3.99003	4	9803	3.99136	4
9744	3.98874	4	9774	3.99007	5	9804	3.99140	5
9745	3.98878	5	9775	3.99012	4	9805	3.99145	4
9746	3.98883	4	9776	3.99016	5	9806	3.99149	5
9747	3.98887	5	9777	3.99021	4	9807	3.99154	4
9748	3.98892	4	9778	3.99025	4	9808	3.99158	4
9749	3.98896	4	9779	3.99029	5	9809	3.99162	5
9750	3.98900	4	9780	3.99034	5	9810	3.99167	5

2.43'30"			2.44'0"			2.44'30"		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
9810	3.99167	4	9840	3.99300	4	9870	3.99432	4
9811	3.99171	5	9841	3.99304	4	9871	3.99436	5
9812	3.99176	4	9842	3.99308	5	9872	3.99441	4
9813	3.99180	5	9843	3.99313	4	9873	3.99445	4
9814	3.99185	4	9844	3.99317	5	9874	3.99449	5
9815	3.99189	4	9845	3.99322	4	9875	3.99454	4
9816	3.99193	5	9846	3.99326	4	9876	3.99458	5
9817	3.99198	4	9847	3.99330	5	9877	3.99463	4
9818	3.99202	5	9848	3.99335	4	9878	3.99467	4
9819	3.99207	4	9849	3.99339	5	9879	3.99471	5
9820	3.99211	5	9850	3.99344	4	9880	3.99476	4
9821	3.99216	4	9851	3.99348	4	9881	3.99480	4
9822	3.99220	4	9852	3.99352	5	9882	3.99484	5
9823	3.99224	5	9853	3.99357	4	9883	3.99489	4
9824	3.99229	4	9854	3.99361	5	9884	3.99493	5
9825	3.99233	5	9855	3.99366	4	9885	3.99498	4
9826	3.99238	4	9856	3.99370	4	9886	3.99502	4
9827	3.99242	5	9857	3.99374	5	9887	3.99506	5
9828	3.99247	4	9858	3.99379	4	9888	3.99511	4
9829	3.99251	4	9859	3.99383	5	9889	3.99515	5
9830	3.99255	5	9860	3.99388	4	9890	3.99520	4
9831	3.99260	4	9861	3.99392	4	9891	3.99524	4
9832	3.99264	5	9862	3.99396	5	9892	3.99528	5
9833	3.99269	4	9863	3.99401	4	9893	3.99533	4
9834	3.99273	4	9864	3.99405	5	9894	3.99537	5
9835	3.99277	5	9865	3.99410	4	9895	3.99542	4
9836	3.99282	4	9866	3.99414	5	9896	3.99546	4
9837	3.99286	5	9867	3.99419	4	9897	3.99550	5
9838	3.99291	4	9868	3.99425	4	9898	3.99555	4
9839	3.99295	5	9869	3.99427	5	9899	3.99559	5
9840	3.99300		9870	3.99432		9900	3.99564	

2. 45' 0"			2. 45' 30"			2. 46' 0'		
Nomb.	Logarit.	D.	Nomb.	Logarit.	D.	Nomb.	Logarit.	D.
9900	3.99564		9930	3.99695		9960	3.99826	
9901	3.99568	4	9931	3.99699	4	9961	3.99830	4
9902	3.99572	4	9932	3.99704	5	9962	3.99835	5
		5			4			4
9903	3.99577		9933	3.99708		9963	3.99839	
9904	3.99581	4	9934	3.99712	4	9964	3.99843	4
9905	3.99585	4	9935	3.99717	5	9965	3.99848	5
		5			4			4
9906	3.99590		9936	3.99721		9966	3.99852	
9907	3.99594	4	9937	3.99726	5	9967	3.99856	4
9908	3.99599	5	9938	3.99730	4	9968	3.99861	5
		4			4			4
9909	3.99603		9939	3.99734		9969	3.99865	
9910	3.99607	4	9940	3.99739	5	9970	3.99870	4
9911	3.99612	5	9941	3.99743	4	9971	3.99874	5
		4			4			4
9912	3.99616		9942	3.99747		9972	3.99878	
9913	3.99621	5	9943	3.99752	5	9973	3.99883	5
9914	3.99625	4	9944	3.99756	4	9974	3.99887	4
		4			4			4
9915	3.99629		9945	3.99760		9975	3.99891	
9916	3.99634	5	9946	3.99765	5	9976	3.99896	5
9917	3.99638	4	9947	3.99769	4	9977	3.99900	4
		4			5			4
9918	3.99642		9948	3.99774		9978	3.99904	
9919	3.99647	5	9949	3.99778	4	9979	3.99909	5
9920	3.99651	4	9950	3.99782	4	9980	3.99913	4
		5			5			4
9921	3.99656		9951	3.99787		9981	3.99917	
9922	3.99660	4	9952	3.99791	4	9982	3.99922	5
9923	3.99664	4	9953	3.99795	4	9983	3.99926	4
		5			5			4
9924	3.99669		9954	3.99800		9984	3.99930	
9925	3.99673	4	9955	3.99804	4	9985	3.99935	5
9926	3.99677	4	9956	3.99808	4	9986	3.99939	4
		5			5			5
9927	3.99682		9957	3.99813		9987	3.99944	
9928	3.99686	4	9958	3.99817	4	9988	3.99948	4
9929	3.99691	5	9959	3.99822	5	9989	3.99952	4
9930	3.99695	4	9960	3.99826	4	9990	3.99957	5

Nomb.	2.46'30"	D.	Nomb.	2.46'34"	D.	Nomb.	2.46'37"	D.
	Logarit.			Logarit.			Logarit.	
9990	3.99957	4	9994	3.99974	4	9997	3.99987	4
9991	3.99961	4	9995	3.99978	5	9998	3.99991	5
9992	3.99965	4	9996	3.99983	4	9999	3.99996	4
9993	3.99970	5	9997	3.99987	4	10000	4.00000	4

**TABLE DES LOGARITHMES,**  
DONT ON FAIT LE PLUS D'USAGE.

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Log. de 360° ou 1296000" . . . . .	6,11260 50
Log. de 24 <sup>h</sup> ou 86400" . . . . .	4,93651 37
Log. de l'arc égal au rayon . . . . .	5,31442 51
Log. de la circonf. 3,14159 . . . . .	0,49714 99
Log. du rayon moyen de la terre, ou de 3268159 toises . . . . .	6,51430 32
Log. de degré moyen de la terre, ou de 57040 toises . . . . .	4,75618 06
Log. de la surface du cercle pour le diametre 1, ou 0,7854 . . . . .	9,89509 00
ou l'ajoute avec le double du logarithme du diametre pag. 14.	
Log. de la solidité d'un globe pour le diam. x ou de 0,52360 . . . . .	9,71899 88
ou l'ajoute avec le triple du logarit. du dia- metre.	
Log. de l'année tropiq. 365 <sup>J</sup> 5 <sup>h</sup> 8' 54" . . . . .	2,56258 09
Log. de l'année syder. 365 6 9 15 . . . . .	2,56259 77



# T A B L E

D E S

## LOGARITHMES

D E S

SINUS ET TANGENTES,

De minute en minute,

Pour tous les degrés du quart-de-cercle.

'	Sin. o	Dif.	Tang. o	Dif. c.	Cot. o	Cos. o	'
0	Inf. neg.		Inf. neg.		Inf. pos.	0.00000	60
1	6.46375		6.46373		3.55627	0.00000	59
2	6.76476	30105	6.76476	30103	3.23524	0.00000	58
3	6.94085	17609	6.94085	17609	3.05915	0.00000	57
4	7.06579	12494	7.06579	12494	2.93421	0.00000	56
5	7.16270	9691	7.16270	9691	2.83730	0.00000	55
6	7.24188	7918	7.24188	7918	2.75812	0.00000	54
7	7.30882	6694	7.30882	6694	2.69118	0.00000	53
8	7.36682	5800	7.36682	5800	2.63518	0.00000	52
9	7.41797	5115	7.41797	5115	2.58203	0.00000	51
10	7.46375	4576	7.46375	4576	2.53627	0.00000	50
11	7.50512	4139	7.50512	4139	2.49488	0.00000	49
12	7.54291	3779	7.54291	3779	2.45704	0.00000	48
13	7.57767	3476	7.57767	3476	2.42235	0.00000	47
14	7.60985	3218	7.60986	3219	2.39014	0.00000	46
15	7.63982	2997	7.63982	2996	2.36018	0.00000	45
16	7.66784	2802	7.66785	2803	2.33215	0.00000	44
17	7.69417	2633	7.69418	2633	2.30582	9.99999	43
18	7.71900	2483	7.71900	2482	2.28100	9.99999	42
19	7.74248	2348	7.74248	2348	2.25752	9.99999	41
20	7.76475	2227	7.76476	2228	2.23524	9.99999	40
21	7.78594	2119	7.78595	2119	2.21405	9.99999	39
22	7.80615	2021	7.80615	2020	2.19385	9.99999	38
23	7.82545	1930	7.82546	1931	2.17454	9.99999	37
24	7.84393	1848	7.84394	1848	2.15606	9.99999	36
25	7.86166	1773	7.86167	1773	2.13833	9.99999	35
26	7.87870	1704	7.87871	1704	2.12129	9.99999	34
27	7.89509	1639	7.89510	1639	2.10490	9.99999	33
28	7.91088	1579	7.91089	1579	2.08911	9.99999	32
29	7.92612	1524	7.92613	1524	2.07387	9.99998	31
30	7.94084	1472	7.94086	1473	2.05914	9.99998	30
	Cos. 80		Cot. 89		Tang. 89	Sin. 89	

'	Sin. o	Dif.	Tang. o	Dif. c	Cot. o	Cos. o	'
30	7.94084		7.94086		2.05914	9.99998	30
31	7.95508	1424	7.95510	1424	2.04490	9.99998	29
32	7.96887	1379	7.96889	1379	2.03111	9.99998	28
		1336		1336			
33	7.98225		7.98225		2.01775	9.99998	27
34	7.99520	1297	7.99522	1297	2.00478	9.99998	26
35	8.00779	1259	8.00781	1259	1.99219	9.99998	25
		1223		1223			
36	8.02002		8.02004		1.97996	9.99998	24
37	8.03192	1190	8.03194	1190	1.96806	9.99997	23
38	8.04350	1158	8.04353	1159	1.95647	9.99997	22
		1128		1128			
39	8.05478		8.05481		1.94519	9.99997	21
40	8.06578	1100	8.06581	1100	1.93419	9.99997	20
41	8.07650	1072	8.07653	1072	1.92347	9.99997	19
		1046		1047			
42	8.08696		8.08700		1.91300	9.99997	18
43	8.09718	1022	8.09722	1022	1.90278	9.99997	17
44	8.10717	999	8.10720	998	1.89280	9.99996	16
		976		976			
45	8.11693		8.11696		1.88304	9.99996	15
46	8.12647	954	8.12651	955	1.87349	9.99996	14
47	8.13581	934	8.13585	934	1.86415	9.99996	13
		914		915			
48	8.14495		8.14500		1.85500	9.99996	12
49	8.15391	896	8.15395	895	1.84605	9.99996	11
50	8.16268	877	8.16273	878	1.83727	9.99995	10
		860		860			
51	8.17128		8.17133		1.82867	9.99995	9
52	8.17971	843	8.17976	843	1.82024	9.99995	8
53	8.18798	827	8.18804	828	1.81196	9.99995	7
		812		812			
54	8.19610		8.19616		1.80384	9.99995	6
55	8.20407	797	8.20413	797	1.79587	9.99994	5
56	8.21189	782	8.21195	782	1.78805	9.99994	4
		769		769			
57	8.21958		8.21964		1.78036	9.99994	3
58	8.22713	755	8.22720	756	1.77280	9.99994	2
59	8.23456	743	8.23462	742	1.76538	9.99994	1
60	8.24186	730	8.24192	730	1.75808	9.99993	0
	Cos. 89		Cot. 89		Tang. 89	Sin. 89	



'	Sin. 1	Dif.	Tang. 1	Dif. c.	Cot. 1	Cos. 1	'
0	8.24186		8.24192		1.75808	9.99993	60
1	8.24903	717	8.24910	718	1.75090	9.99993	59
2	8.25609	706	8.25616	706	1.74384	9.99993	58
		695		696			
3	8.26304		8.26312		1.73688	9.99993	57
4	8.26988	684	8.26996	684	1.73004	9.99992	56
5	8.27661	673	8.27669	673	1.72331	9.99992	55
		663		663			
6	8.28324		8.28332		1.71668	9.99992	54
7	8.28977	653	8.28986	654	1.71014	9.99992	53
8	8.29621	644	8.29629	643	1.70371	9.99992	52
		634		634			
9	8.30255		8.30263		1.69737	9.99991	51
10	8.30879	624	8.30888	625	1.69112	9.99991	50
11	8.31495	616	8.31505	617	1.68495	9.99991	49
		608		607			
12	8.32103		8.32112		1.67888	9.99990	48
13	8.32702	599	8.32711	599	1.67289	9.99990	47
14	8.33292	590	8.33302	591	1.66698	9.99990	46
		583		584			
15	8.33875		8.33886		1.66114	9.99990	45
16	8.34450	575	8.34461	575	1.65539	9.99989	44
17	8.35018	568	8.35029	568	1.64971	9.99989	43
		560		561			
18	8.35578		8.35590		1.64410	9.99989	42
19	8.36131	553	8.36143	553	1.63857	9.99989	41
20	8.36678	547	8.36689	546	1.63311	9.99988	40
		539		540			
21	8.37217		8.37229		1.62771	9.99988	39
22	8.37750	533	8.37762	533	1.62238	9.99988	38
23	8.38276	526	8.38289	527	1.61711	9.99987	37
		520		520			
24	8.38796		8.38809		1.61191	9.99987	36
25	8.39310	514	8.39323	514	1.60677	9.99987	35
26	8.39818	508	8.39832	509	1.60168	9.99986	34
		502		502			
27	8.40320		8.40334		1.59666	9.99986	33
28	8.40816	496	8.40830	496	1.59170	9.99986	32
29	8.41307	491	8.41321	491	1.58679	9.99985	31
30	8.41792	485	8.41807	486	1.58193	9.99985	30
	Cos. 88		Cot. 88		Tang. 88	Sin. 88	



'	Sin. 1	Dif.	Tang. 1	Dif. c.	Cot. 1	Cos. 1	'
30	8.41792		8.41807		1.58193	9.99985	30
31	8.42272	480	8.42287	480	1.57713	9.99985	29
32	8.42746	474	8.42762	475	1.57238	9.99984	28
		470		470			
33	8.43216		8.43232		1.56768	9.99984	27
34	8.43680	464	8.43696	464	1.56304	9.99984	26
35	8.44139	459	8.44156	460	1.55844	9.99983	25
		455		455			
36	8.44594		8.44611		1.55389	9.99983	24
37	8.45044	450	8.45061	450	1.54939	9.99983	23
38	8.45489	445	8.45507	446	1.54493	9.99982	22
		441		441			
39	8.45930		8.45948		1.54052	9.99982	21
40	8.46366	436	8.46385	437	1.53615	9.99982	20
41	8.46798	432	8.46817	432	1.53183	9.99981	19
		428		428			
42	8.47226		8.47245		1.52755	9.99981	18
43	8.47650	424	8.47669	424	1.52331	9.99981	17
44	8.48069	419	8.48089	420	1.51911	9.99980	16
		416		416			
45	8.48485		8.48505		1.51495	9.99980	15
46	8.48896	411	8.48917	412	1.51083	9.99979	14
47	8.49304	408	8.49325	408	1.50675	9.99979	13
		404		404			
48	8.49708		8.49729		1.50271	9.99979	12
49	8.50108	400	8.50130	401	1.49870	9.99978	11
50	8.50504	396	8.50527	397	1.49473	9.99978	10
		393		393			
51	8.50897		8.50920		1.49080	9.99977	9
52	8.51287	390	8.51310	390	1.48690	9.99977	8
53	8.51673	386	8.51696	386	1.48304	9.99977	7
		382		383			
54	8.52055		8.52079		1.47921	9.99976	6
55	8.52434	379	8.52459	380	1.47541	9.99976	5
56	8.52810	376	8.52835	376	1.47165	9.99975	4
		373		373			
57	8.53183		8.53208		1.46792	9.99975	3
58	8.53552	369	8.53578	370	1.46422	9.99974	2
59	8.53919	367	8.53945	367	1.46055	9.99974	1
60	8.54282	363	8.54308	363	1.45692	9.99974	0
	Cos. 88		Cot. 88		Tang. 88	Sin. 88	

'	Sin. 2	Dif.	Tang. 2	Dif. c.	Cot. 2	Cos. 2	'
0	8.54282	360	8.54308	361	1.45692	9.99974	60
1	8.54642	357	8.54669	358	1.45331	9.99975	59
2	8.54999	355	8.55027	355	1.44973	9.99975	58
3	8.55354	351	8.55382	352	1.44618	9.99972	57
4	8.55705	349	8.55734	349	1.44266	9.99972	56
5	8.56054	346	8.56083	346	1.43917	9.99971	55
6	8.56400	343	8.56429	344	1.43571	9.99971	54
7	8.56745	341	8.56775	341	1.43227	9.99970	53
8	8.57084	337	8.57114	338	1.42886	9.99970	52
9	8.57421	336	8.57452	336	1.42548	9.99969	51
10	8.57757	332	8.57788	333	1.42212	9.99969	50
11	8.58089	330	8.58121	330	1.41879	9.99968	49
12	8.58419	328	8.58451	328	1.41549	9.99968	48
13	8.58747	325	8.58779	326	1.41221	9.99967	47
14	8.59072	323	8.59105	323	1.40895	9.99967	46
15	8.59395	320	8.59428	321	1.40572	9.99967	45
16	8.59715	318	8.59749	319	1.40251	9.99966	44
17	8.60033	316	8.60068	316	1.39932	9.99966	43
18	8.60349	313	8.60384	314	1.39616	9.99965	42
19	8.60662	311	8.60698	311	1.39302	9.99964	41
20	8.60973	309	8.61009	310	1.38991	9.99964	40
21	8.61282	307	8.61319	307	1.38681	9.99963	39
22	8.61589	305	8.61626	305	1.38374	9.99963	38
23	8.61894	302	8.61931	303	1.38069	9.99962	37
24	8.62196	301	8.62234	301	1.37766	9.99962	36
25	8.62497	298	8.62535	299	1.37465	9.99961	35
26	8.62795	296	8.62834	297	1.37166	9.99961	34
27	8.63091	294	8.63131	295	1.36869	9.99960	33
28	8.63385	293	8.63426	292	1.36574	9.99960	32
29	8.63678	290	8.63718	290	1.36282	9.99959	31
30	8.63968		8.64009	290	1.35991	9.99959	30
	Cos. 87		Cos. 88		Tang. 87	Sin. 87	

'	Sin. 2	Dif.	Tang. 2	Dif. c.	Cot. 2	Cos. 2	'
30	8.63968	288	8.64009	289	1.35991	9.99959	30
31	8.64256	287	8.64298	287	1.35702	9.99958	29
32	8.64543	284	8.64585	285	1.35415	9.99958	28
33	8.64827	283	8.64870	284	1.35130	9.99957	27
34	8.65110	281	8.65154	281	1.34846	9.99956	26
35	8.65391	279	8.65435	280	1.34565	9.99956	25
36	8.65670	277	8.65715	278	1.34285	9.99955	24
37	8.65947	276	8.65993	276	1.34007	9.99955	23
38	8.66223	274	8.66269	274	1.33731	9.99954	22
39	8.66497	272	8.66543	273	1.33457	9.99954	21
40	8.66769	270	8.66816	271	1.33184	9.99953	20
41	8.67039	269	8.67087	269	1.32913	9.99952	19
42	8.67308	267	8.67356	268	1.32644	9.99952	18
43	8.67575	266	8.67624	266	1.32376	9.99951	17
44	8.67841	263	8.67890	264	1.32110	9.99951	16
45	8.68104	263	8.68154	263	1.31846	9.99950	15
46	8.68367	260	8.68417	261	1.31583	9.99949	14
47	8.68627	259	8.68678	260	1.31322	9.99949	13
48	8.68886	258	8.68938	258	1.31062	9.99948	12
49	8.69144	256	8.69196	257	1.30804	9.99948	11
50	8.69400	254	8.69453	255	1.30547	9.99947	10
51	8.69654	253	8.69708	254	1.30292	9.99946	9
52	8.69907	252	8.69962	252	1.30038	9.99946	8
53	8.70159	250	8.70214	251	1.29786	9.99945	7
54	8.70409	249	8.70465	249	1.29535	9.99944	6
55	8.70658	247	8.70714	248	1.29286	9.99944	5
56	8.70905	246	8.70962	246	1.29038	9.99943	4
57	8.71151	244	8.71208	245	1.28792	9.99942	3
58	8.71395	243	8.71453	244	1.28547	9.99942	2
59	8.71638	242	8.71697	243	1.28303	9.99941	1
60	8.71880	242	8.71940	243	1.28060	9.99940	0
	Cos. 87		Cot. 87		Tang. 87	Sin. 87	



	Sin. 3	Dif.	Tang. 3	Dif. c.	Cot. 3	Cos. 3	
0	8.71880		8.71940		1.28060	9.99940	60
1	8.72120	240	8.72181	241	1.27819	9.99940	59
2	8.72359	259	8.72420	259	1.27580	9.99939	58
		238		259			
3	8.72597		8.72659		1.27341	9.99938	57
4	8.72834	237	8.72896	237	1.27104	9.99938	56
5	8.73069	255	8.73132	256	1.26868	9.99937	55
		234		234			
6	8.73303		8.73366		1.26634	9.99936	54
7	8.73535	252	8.73600	254	1.26400	9.99936	53
8	8.73767	252	8.73832	252	1.26168	9.99935	52
		250		251			
9	8.73997		8.74063		1.25937	9.99934	51
10	8.74226	229	8.74292	229	1.25708	9.99934	50
11	8.74454	228	8.74521	229	1.25479	9.99933	49
		226		227			
12	8.74680		8.74748		1.25252	9.99932	48
13	8.74906	226	8.74974	226	1.25026	9.99932	47
14	8.75130	224	8.75199	225	1.24801	9.99931	46
		225		224			
15	8.75353		8.75423		1.24577	9.99930	45
16	8.75575	222	8.75645	222	1.24355	9.99929	44
17	8.75795	220	8.75867	222	1.24133	9.99929	43
		220		220			
18	8.76015		8.76087		1.23913	9.99928	42
19	8.76234	219	8.76306	219	1.23694	9.99927	41
20	8.76451	217	8.76525	219	1.23475	9.99926	40
		216		217			
21	8.76667		8.76742		1.23258	9.99926	39
22	8.76883	216	8.76958	216	1.23042	9.99925	38
23	8.77097	214	8.77173	215	1.22827	9.99924	37
		215		214			
24	8.77310		8.77387		1.22613	9.99923	36
25	8.77522	212	8.77600	213	1.22400	9.99923	35
26	8.77733	211	8.77811	211	1.22189	9.99922	34
		210		211			
27	8.77943		8.78022		1.21978	9.99921	33
28	8.78152	209	8.78232	210	1.21768	9.99920	32
29	8.78360	208	8.78441	209	1.21559	9.99920	31
30	8.78568	208	8.78649	208	1.21351	9.99919	30
	Cos. 86		Cot. 86		Tang. 86	Sin. 86	



'	Sin. 3	Dif.	Tang. 3	Dif.c.	Cot. 3	Cos. 3	'
30	8.78568		8.78649		1.21351	9.99919	30
31	8.78774	206	8.78855	206	1.21145	9.99918	29
32	8.78979	205	8.79061	206	1.20939	9.99917	28
		204		205			
33	8.79183		8.79266		1.20734	9.99917	27
34	8.79386	203	8.79470	204	1.20530	9.99916	26
35	8.79588	202	8.79673	203	1.20327	9.99915	25
		201		202			
36	8.79789		8.79875		1.20125	9.99914	24
37	8.79990	201	8.80076	201	1.19924	9.99913	23
38	8.80189	199	8.80277	201	1.19723	9.99913	22
		199		199			
39	8.80388		8.80476		1.19524	9.99912	21
40	8.80585	197	8.80674	198	1.19326	9.99911	20
41	8.80782	197	8.80872	198	1.19128	9.99910	19
		196		196			
42	8.80978		8.81068		1.18932	9.99909	18
43	8.81173	195	8.81264	196	1.18736	9.99909	17
44	8.81367	194	8.81459	195	1.18541	9.99908	16
		193		194			
45	8.81560		8.81653		1.18347	9.99907	15
46	8.81752	192	8.81846	193	1.18154	9.99906	14
47	8.81944	192	8.82038	192	1.17962	9.99905	13
		190		192			
48	8.82134		8.82230		1.17770	9.99904	12
49	8.82324	190	8.82420	190	1.17580	9.99904	11
50	8.82513	189	8.82610	190	1.17390	9.99903	10
		188		189			
51	8.82701		8.82799		1.17201	9.99902	9
52	8.82888	187	8.82897	188	1.17013	9.99901	8
53	8.83075	187	8.83175	188	1.16825	9.99900	7
		186		186			
54	8.83261		8.83361		1.16639	9.99899	6
55	8.83446	185	8.83547	186	1.16453	9.99898	5
56	8.83630	184	8.83732	185	1.16268	9.99898	4
		183		184			
57	8.83813		8.83916		1.16084	9.99897	3
58	8.83996	183	8.84100	184	1.15900	9.99896	2
59	8.84177	181	8.84282	182	1.15718	9.99895	1
60	8.84358	181	8.84464	182	1.15536	9.99894	0
	Cos. 86		Cos. 86		Tang. 86	Sin. 86	

'	Sin. 4	Dif.	Tang. 4	Dif. c.	Cot. 4	Cos. 4	'
0	8.84358		8.84464		1.15536	9.99894	60
1	8.84539	181	8.84646	182	1.15554	9.99895	59
2	8.84718	179	8.84826	180	1.15174	9.99892	58
		179		180			
3	8.84897	178	8.85006	179	1.14994	9.99891	57
4	8.85075	177	8.85185	178	1.14815	9.99891	56
5	8.85252	177	8.85363	178	1.14637	9.99890	55
		177		177			
6	8.85429	176	8.85540	177	1.14460	9.99889	54
7	8.85605	175	8.85717	176	1.14283	9.99888	53
8	8.85780	175	8.85893	176	1.14107	9.99887	52
		175		176			
9	8.85955	173	8.86069	174	1.13931	9.99886	51
10	8.86128	173	8.86243	174	1.13757	9.99885	50
11	8.86301	173	8.86417	174	1.13583	9.99884	49
		173		174			
12	8.86474	171	8.86591	172	1.13409	9.99883	48
13	8.86645	171	8.86763	172	1.13237	9.99882	47
14	8.86816	171	8.86935	172	1.13065	9.99881	46
		171		171			
15	8.86987	169	8.87106	171	1.12894	9.99880	45
16	8.87156	169	8.87277	170	1.12723	9.99879	44
17	8.87325	169	8.87447	169	1.12553	9.99879	43
		169		169			
18	8.87494	167	8.87616	169	1.12384	9.99878	42
19	8.87661	168	8.87785	168	1.12215	9.99877	41
20	8.87829	166	8.87953	167	1.12047	9.99876	40
		166		167			
21	8.87995	166	8.88120	167	1.11880	9.99875	39
22	8.88161	165	8.88287	166	1.11713	9.99874	38
23	8.88326	164	8.88453	165	1.11547	9.99873	37
		164		165			
24	8.88490	164	8.88618	165	1.11382	9.99872	36
25	8.88654	163	8.88783	165	1.11217	9.99871	35
26	8.88817	163	8.88948	163	1.11052	9.99870	34
		163		163			
27	8.88980	162	8.89111	163	1.10889	9.99869	33
28	8.89142	162	8.89274	163	1.10726	9.99868	32
29	8.89304	160	8.89437	161	1.10563	9.99867	31
30	8.89464	160	8.89598	161	1.10402	9.99866	30
	Cos. 85		Cot. 85		Tang. 85	Sin. 85	

	Sin. 4	Dif.	Tang. 4	Dif. c.	Cot. 4	Cos. 4	'
30	8.89464		8.89598		1.10402	9.99866	30
31	8.89625	161	8.89760	162	1.10240	9.99865	29
32	8.89784	159	8.89920	160	1.10080	9.99864	28
		159		160			
33	8.89943	159	8.90080	160	1.09920	9.99863	27
34	8.90102	158	8.90240	159	1.09760	9.99862	26
35	8.90260	157	8.90399	158	1.09601	9.99861	25
		157		158			
36	8.90417	157	8.90557	158	1.09443	9.99860	24
37	8.90574	156	8.90716	157	1.09285	9.99859	23
38	8.90730	155	8.90872	157	1.09128	9.99858	22
		155		157			
39	8.90885	155	8.91029	156	1.08971	9.99857	21
40	8.91040	155	8.91185	155	1.08815	9.99856	20
41	8.91195	154	8.91340	155	1.08660	9.99855	19
		154		155			
42	8.91349	153	8.91495	155	1.08505	9.99854	18
43	8.91502	153	8.91650	153	1.08350	9.99853	17
44	8.91655	152	8.91803	154	1.08197	9.99852	16
		152		154			
45	8.91807	152	8.91957	153	1.08043	9.99851	15
46	8.91959	151	8.92110	152	1.07890	9.99850	14
47	8.92110	151	8.92262	152	1.07738	9.99848	13
		151		152			
48	8.92261	150	8.92414	151	1.07586	9.99847	12
49	8.92411	150	8.92565	151	1.07435	9.99846	11
50	8.92561	149	8.92716	150	1.07284	9.99845	10
		149		150			
51	8.92710	149	8.92866	150	1.07134	9.99844	9
52	8.92859	148	8.93016	149	1.06984	9.99843	8
53	8.93007	147	8.93165	148	1.06835	9.99842	7
		147		148			
54	8.93154	147	8.93313	149	1.06687	9.99841	6
55	8.93301	147	8.93462	147	1.06538	9.99840	5
56	8.93448	146	8.93609	147	1.06391	9.99839	4
		146		147			
57	8.93594	146	8.93756	147	1.06244	9.99838	3
58	8.93740	145	8.93903	146	1.06097	9.99837	2
59	8.93885	145	8.94049	146	1.05951	9.99836	1
60	8.94030	145	8.94195	146	1.05805	9.99934	0
	Cos. 85		Cot. 85		Tang. 85	Sin. 85	



'	Sin. 5	Dif.	Tang. 5	Dif. e.	Cot. 5	Cos. 5	'
0	8.94030		8.94195		1.05805	9.99834	60
1	8.94174	144	8.94340	145	1.05660	9.99833	59
2	8.94317	145	8.94485	145	1.05515	9.99832	58
3	8.94461	144	8.94630	145	1.05370	9.99831	57
4	8.94603	142	8.94773	143	1.05227	9.99830	56
5	8.94746	143	8.94917	144	1.05083	9.99829	55
6	8.94887	141	8.95060	143	1.04940	9.99828	54
7	8.95029	142	8.95202	142	1.04798	9.99827	53
8	8.95170	141	8.95344	142	1.04656	9.99825	52
9	8.95310	140	8.95486	142	1.04514	9.99824	51
10	8.95450	140	8.95627	141	1.04373	9.99823	50
11	8.95589	139	8.95767	140	1.04233	9.99822	49
12	8.95728	139	8.95908	141	1.04092	9.99821	48
13	8.95867	139	8.96047	139	1.03953	9.99820	47
14	8.96005	138	8.96187	140	1.03813	9.99819	46
15	8.96143	138	8.96325	138	1.03675	9.99817	45
16	8.96280	137	8.96464	139	1.03536	9.99816	44
17	8.96417	137	8.96602	138	1.03398	9.99815	43
18	8.96555	136	8.96739	137	1.03261	9.99814	42
19	8.96689	136	8.96877	138	1.03125	9.99813	41
20	8.96825	136	8.97013	136	1.02987	9.99812	40
21	8.96960	135	8.97150	137	1.02850	9.99810	39
22	8.97095	135	8.97285	135	1.02715	9.99809	38
23	8.97229	135	8.97421	136	1.02579	9.99808	37
24	8.97363	134	8.97556	135	1.02444	9.99807	56
25	8.97496	133	8.97691	135	1.02309	9.99806	35
26	8.97629	133	8.97825	134	1.02175	9.99804	34
27	8.97762	133	8.97959	134	1.02041	9.99803	33
28	8.97894	132	8.98092	133	1.01908	9.99802	32
29	8.98026	132	8.98225	133	1.01775	9.99801	31
30	8.98157	131	8.98358	133	1.01642	9.99800	30
	Cos. 87		Cos. 84		Tang. 84	Sin. 84	



'	Sin. 5	Dif.	Tang. 5	Dif. c.	Cot. 5	Cos. 5	'
30	8.98157		8.98358		1.01642	9.99800	30
31	8.98288	131	8.98490	132	1.01510	9.99798	29
32	8.98419	131	8.98622	132	1.01378	9.99797	28
		130		131			
33	8.98549		8.98753		1.01247	9.99796	27
34	8.98679	130	8.98884	131	1.01116	9.99795	26
35	8.98808	129	8.99015	131	1.00985	9.99793	25
		129		130			
36	8.98937		8.99145		1.00855	9.99792	24
37	8.99066	129	8.99275	130	1.00725	9.99791	23
38	8.99194	128	8.99405	130	1.00595	9.99790	22
		128		129			
39	8.99322		8.99534		1.00466	9.99788	21
40	8.99450	128	8.99662	128	1.00338	9.99787	20
41	8.99577	127	8.99791	129	1.00209	9.99786	19
		127		128			
42	8.99704		8.99919		1.00081	9.99785	18
43	8.99830	126	9.00046	127	0.99954	9.99783	17
44	8.99956	126	9.00174	128	0.99826	9.99782	16
		126		127			
45	9.00082		9.00301		0.99699	9.99781	15
46	9.00207	125	9.00427	126	0.99573	9.99780	14
47	9.00332	125	9.00553	126	0.99447	9.99778	13
		124		126			
48	9.00456		9.00679		0.99321	9.99777	12
49	9.00581	125	9.00805	126	0.99195	9.99776	11
50	9.00704	123	9.00930	125	0.99070	9.99775	10
		124		125			
51	9.00828		9.01055		0.98945	9.99773	9
52	9.00951	123	9.01179	124	0.98821	9.99772	8
53	9.01074	123	9.01303	124	0.98697	9.99771	7
		122		124			
54	9.01196		9.01427		0.98573	9.99769	6
55	9.01318	122	9.01550	123	0.98450	9.99768	5
56	9.01440	122	9.01673	123	0.98327	9.99767	4
		121		123			
57	9.01561		9.01796		0.98204	9.99765	3
58	9.01682	121	9.01918	122	0.98082	9.99764	2
59	9.01803	121	9.02040	122	0.97960	9.99763	1
60	9.01923	120	9.02162	122	0.97838	9.99761	0
	Cos. 84		Cot. 84		Tang. 84	Sin. 84	

"	Sin. 6	Dif.	Tang. 6	Dif. c.	Cot. 6	Cos. 6.	"
0	8.01925		8.02162		0.97838	9.99761	60
1	8.02043	120	8.02283	121	0.97717	9.99760	59
2	8.02163	120	8.02404	121	0.97596	9.99759	58
3	8.02283	120	8.02525	121	0.97475	9.99757	57
4	8.02402	119	8.02645	120	0.97355	9.99756	56
5	8.02520	118	8.02766	121	0.97234	9.99755	55
6	8.02639	119	8.02885	119	0.97115	9.99753	54
7	8.02757	118	8.03005	120	0.96995	9.99752	53
8	8.02874	117	8.03124	119	0.96876	9.99751	52
9	8.02992	118	8.03242	118	0.96758	9.99749	51
10	8.03109	117	8.03361	119	0.96639	9.99748	50
11	8.03226	117	8.03479	118	0.96521	9.99747	49
12	8.03342	116	8.03597	118	0.96403	9.99745	48
13	8.03458	116	8.03714	117	0.96286	9.99744	47
14	8.03574	116	8.03832	118	0.96168	9.99742	46
15	8.03690	116	8.03948	116	0.96052	9.99741	45
16	8.03805	115	8.04065	117	0.95935	9.99740	44
17	8.03920	115	8.04181	116	0.95819	9.99738	43
18	8.04034	114	8.04297	116	0.95703	9.99737	42
19	8.04149	115	8.04413	116	0.95587	9.99736	41
20	8.04263	113	8.04528	115	0.95472	9.99734	40
21	8.04376	114	8.04643	115	0.95357	9.99733	39
22	8.04490	114	8.04758	115	0.95242	9.99731	38
23	8.04603	113	8.04873	115	0.95127	9.99730	37
24	8.04715	112	8.04987	114	0.95013	9.99728	36
25	8.04828	113	8.05101	114	0.94899	9.99727	35
26	8.04940	112	8.05214	113	0.94786	9.99726	34
27	8.05052	112	8.05328	114	0.94672	9.99724	33
28	8.05164	112	8.05441	113	0.94559	9.99723	32
29	8.05275	111	8.05553	112	0.94447	9.99721	31
30	8.05386	111	8.05666	113	0.94334	9.99720	30
	Cos. 83		Cot. 83		Tang. 83	Sin. 83	

'	Sin. 6	Dif.	Tang. 6	Dif. c.	Cot. 6	Cos. 6	'
30	9.05386		9.05666		0.94334	9.99720	30
31	9.05497	111	9.05778	112	0.94222	9.99718	29
32	9.05607	110	9.05890	112	0.94110	9.99717	28
		110		112			
33	9.05717		9.06002		0.93998	9.99716	27
34	9.05827	110	9.06113	111	0.93887	9.99714	26
35	9.05937	110	9.06224	111	0.93776	9.99713	25
		109		111			
36	9.06046		9.06335		0.93665	9.99711	24
37	9.06155	109	9.06445	110	0.93555	9.99710	23
38	9.06264	109	9.06556	111	0.93444	9.99708	22
		108		110			
39	9.06372		9.06666		0.93334	9.99707	21
40	9.06481	109	9.06775	109	0.93225	9.99705	20
41	9.06589	108	9.06885	110	0.93115	9.99704	19
		107		109			
42	9.06696		9.06994		0.93006	9.99702	18
43	9.06804	108	9.07103	109	0.92897	9.99701	17
44	9.06911	107	9.07211	108	0.92789	9.99699	16
		107		109			
45	9.07018		9.07320		0.92680	9.99698	15
46	9.07124	106	9.07428	108	0.92572	9.99696	14
47	9.07231	107	9.07536	108	0.92464	9.99695	13
		106		107			
48	9.07337		9.07643		0.92357	9.99695	12
49	9.07442	105	9.07751	108	0.92249	9.99692	11
50	9.07548	106	9.07858	107	0.92142	9.99690	10
		105		106			
51	9.07653		9.07964		0.92036	9.99689	9
52	9.07758	105	9.08071	107	0.91929	9.99687	8
53	9.07863	105	9.08177	106	0.91823	9.99686	7
		105		106			
54	9.07968		9.08283		0.91717	9.99684	6
55	9.08072	104	9.08389	106	0.91611	9.99683	5
56	9.08176	104	9.08495	106	0.91505	9.99681	4
		104		105			
57	9.08280		9.08600		0.91400	9.99680	3
58	9.08383	103	9.08705	105	0.91295	9.99678	2
59	9.08486	103	9.08810	105	0.91190	9.99677	1
60	9.08589	103	9.08914	104	0.91086	9.99675	0
	Cos. 83		Cot. 83		Tang. 83	Sin. 83	



'	Sin. 7	Dif.	Tang. 7	Dif. c.	Cot. 7	Cos. 7	'
0	9.08589		9.08914		0.91086	9.99675	60
1	9.08692	103	9.09019	105	0.90981	9.99674	59
2	9.08795	103	9.09123	104	0.90877	9.99672	58
		102		104			
3	9.08897	102	9.09227	103	0.90773	9.99670	57
4	9.08999	102	9.09330	104	0.90670	9.99669	56
5	9.09101	101	9.09434	103	0.90566	9.99667	55
		102		103			
6	9.09202	102	9.09537	102	0.90463	9.69666	54
7	9.09304	101	9.09640	102	0.90360	9.99664	53
8	9.09405	101	9.09742	103	0.90258	9.99663	52
		100		102			
9	9.09506	100	9.09845	102	0.90155	9.99661	51
10	9.09606	101	9.09947	102	0.90053	9.99659	50
11	9.09707	100	9.10049	101	0.89951	9.99658	49
		100		101			
12	9.09807	100	9.10150	102	0.89850	9.99656	48
13	9.09907	99	9.10252	101	0.89748	9.99655	47
14	9.10006	99	9.10353	101	0.89647	9.99653	46
		100		101			
15	9.10106	99	9.10454	101	0.89546	9.99651	45
16	9.10205	99	9.10555	101	0.89445	9.99650	44
17	9.10304	98	9.10656	100	0.89344	9.99648	43
		98		100			
18	9.10402	99	9.10756	100	0.89244	9.99647	42
19	9.10501	98	9.10856	100	0.89144	9.99645	41
20	9.10599	98	9.10956	100	0.89044	9.99643	40
		98		100			
21	9.10697	98	9.11056	99	0.88944	9.99642	39
22	9.10795	98	9.11155	99	0.88845	9.99640	38
23	9.10893	97	9.11254	99	0.88746	9.99638	37
		97		99			
24	9.10990	97	9.11353	99	0.88647	9.99637	36
25	9.11087	97	9.11452	99	0.88548	9.99635	35
26	9.11184	97	9.11551	99	0.88449	9.99633	34
		97		98			
27	9.11281	96	9.11649	98	0.88351	9.99632	33
28	9.11377	97	9.11747	98	0.88253	9.99630	32
29	9.11474	96	9.11845	98	0.88155	9.99629	31
30	9.11570	96	9.11943	98	0.88057	9.99627	30
	Cos. 82		Cot. 82		Tang. 82	Sin. 82	



	Sin. 7	Dif.	Tang. 7	Dif.c.	Cot. 7	Cos. 7	
30	9.11570		9.11943		0.88057	9.99627	30
31	9.11666	96	9.12040	97	0.87960	9.99625	29
32	9.11761	95	9.12138	98	0.87862	9.99624	28
		96		97			
33	9.11857		9.12235		0.87765	9.99622	27
34	9.11952	95	9.12332	97	0.87668	9.99620	26
35	9.12047	95	9.12428	96	0.87572	9.99618	25
		95		97			
36	9.12142		9.12525		0.87475	9.99617	24
37	9.12236	94	9.12621	96	0.87379	9.99615	23
38	9.12331	95	9.12717	96	0.87283	9.99613	22
		94		96			
39	9.12425		9.12813		0.87187	9.99612	21
40	9.12519	94	9.12909	96	0.87091	9.99610	20
41	9.12613	93	9.13004	95	0.86996	9.99608	19
		94		95			
42	9.12706		9.13099		0.86901	9.99607	18
43	9.12799	93	9.13194	95	0.86806	9.99605	17
44	9.12892	93	9.13289	95	0.86711	9.99603	16
		93		95			
45	9.12985		9.13384		0.86616	9.99601	15
46	9.13078	93	9.13478	94	0.86522	9.99600	14
47	9.13171	93	9.13573	95	0.86427	9.99598	13
		92		94			
48	9.13265		9.13667		0.86333	9.99596	12
49	9.13355	92	9.13761	94	0.86239	9.99595	11
50	9.13447	92	9.13854	93	0.86146	9.99593	10
		92		94			
51	9.13539		9.13948		0.86052	9.99591	9
52	9.13630	91	9.14041	93	0.85959	9.99589	8
53	9.13722	92	9.14134	93	0.85866	9.99588	7
		91		93			
54	9.13813		9.14227		0.85773	9.99586	6
55	9.13904	91	9.14320	93	0.85680	9.99584	5
56	9.13994	90	9.14412	92	0.85588	9.99582	4
		91		92			
57	9.14085		9.14504		0.86496	9.99581	3
58	9.14175	90	9.14597	93	0.85403	9.99579	2
59	9.14266	91	9.14688	91	0.85312	9.99577	1
60	9.14356	90	9.14780	92	0.85220	9.99575	0
	Cos. 82		Cot. 82		Tang. 82	Sin. 82	

'	Sin. 8	Dif.	Tang. 8	Dif. c.	Cot. 8	Cos. 8	'
0	9.14356		9.14780		0.85220	9.99575	60
1	9.14445	89	9.14872	92	0.85128	9.99574	59
2	9.14535	90	9.14963	91	0.85037	9.99572	58
		89		91			
3	9.14624	90	9.15054	91	0.84946	9.99570	57
4	9.14714	89	9.15145	91	0.84855	9.99568	56
5	9.14803	88	9.15236	91	0.84764	9.99566	55
		88		91			
6	9.14891	89	9.15327	90	0.84673	9.99565	54
7	9.14980	89	9.15417	91	0.84583	9.99563	53
8	9.15069	88	9.15508	90	0.84492	9.99561	52
		88		90			
9	9.15157	88	9.15598	90	0.84402	9.99559	51
10	9.15245	88	9.15688	89	0.84312	9.99557	50
11	9.15333	88	9.15777	90	0.84223	9.99556	49
		87		89			
12	9.15421	87	9.15867	89	0.84133	9.99554	48
13	9.15508	88	9.15956	90	0.84044	9.99552	47
14	9.15596	87	9.16046	89	0.83954	9.99550	46
		87		89			
15	9.15683	87	9.16135	89	0.83865	9.99548	45
16	9.15770	87	9.16224	88	0.83776	9.99546	44
17	9.15857	87	9.16312	89	0.83688	9.99545	43
		86		88			
18	9.15944	86	9.16401	88	0.83599	9.99543	42
19	9.16030	86	9.16489	88	0.83511	9.99541	41
20	9.16116	87	9.16577	88	0.83423	9.99539	40
		86		88			
21	9.16203	85	9.16665	88	0.83335	9.99537	39
22	9.16289	85	9.16753	88	0.83247	9.99535	38
23	9.16374	86	9.16841	87	0.83159	9.99533	37
		85		88			
24	9.16460	85	9.16928	88	0.83072	9.99532	36
25	9.16545	86	9.17016	87	0.82984	9.99530	35
26	9.16631	85	9.17103	87	0.82897	9.99528	34
		85		87			
27	9.16716	85	9.17190	87	0.82810	9.99526	33
28	9.16801	85	9.17277	86	0.82723	9.99524	32
29	9.16886	84	9.17363	87	0.82637	9.99522	31
30	9.16970		9.17450		0.82550	9.99520	30
	Cos. 81		Cot. 81		Tang. 81	Sin. 81	

	Sin. 8	Dif.	Tang. 8	Dif. c.	Cot. 8	Cos. 8	'
30	9.16970	85	9.17450	86	0.82550	9.99520	30
31	9.17055	84	9.17536	86	0.82464	9.99518	29
32	9.17139	84	9.17622	86	0.82378	9.99517	28
33	9.17223	84	9.17708	86	0.82292	9.99515	27
34	9.17307	84	9.17794	86	0.82206	9.99513	26
35	9.17391	83	9.17880	85	0.82120	9.99511	25
36	9.17474	84	9.17965	86	0.82035	9.99509	24
37	9.17558	83	9.18051	85	0.81949	9.99507	23
38	9.17641	83	9.18136	85	0.81864	9.99505	22
39	9.97724	83	9.18221	85	0.81779	9.99503	21
40	9.97807	83	9.18306	85	0.81694	9.99501	20
41	9.97890	83	9.18391	84	0.81609	9.99499	19
42	9.17973	82	9.18475	85	0.81525	9.99497	18
43	9.18055	82	9.18560	84	0.81440	9.99495	17
44	9.18137	83	9.18644	84	0.81356	9.99494	16
45	9.18220	82	9.18728	84	0.81272	9.99492	15
46	9.18302	81	9.18812	84	0.81188	9.99490	14
47	9.18383	82	9.18896	83	0.81104	9.99488	13
48	9.18465	82	9.18979	84	0.81021	9.99486	12
49	9.18547	81	9.19063	83	0.80937	9.99484	11
50	9.18628	81	9.19146	83	0.80854	9.99482	10
51	9.18709	81	9.19229	83	0.80771	9.99480	9
52	9.18790	81	9.19312	83	0.80688	9.99478	8
53	9.18871	81	9.19395	83	0.80605	9.99476	7
54	9.18952	81	9.19478	83	0.80522	9.99474	6
55	9.19033	80	9.19561	82	0.80439	9.99472	5
56	9.19113	80	9.19643	82	0.80357	9.99470	4
57	6.19193	80	9.19725	82	0.80275	9.99468	3
58	9.19273	80	9.19807	82	0.80193	9.99466	2
59	9.19353	80	9.19889	82	0.80111	9.99464	1
60	9.19433		9.19971		0.80029	9.99462	0
	Cos. 81		Cot. 81		Tang. 81	Sin. 81	



'	Sin. 9	Dif.	Tang. 9	Dif. c.	Cot. 9	Cos. 9	'
0	9.19433		9.19971		0.80029	9.99462	60
1	9.19513	80	9.20053	82	0.79947	9.99460	59
2	9.19592	79	9.20134	81	0.79866	9.99458	58
		80		82			
3	9.19672	79	9.20216	81	0.79784	9.99456	57
4	9.19751	79	9.20297	81	0.79703	9.99454	56
5	9.19830	79	9.20378	81	0.79622	9.99452	55
		79		81			
6	9.19909	79	9.20459	81	0.79541	9.99450	54
7	9.19988	79	9.20540	81	0.79460	9.99448	53
8	9.20067	79	9.20621	81	0.79379	9.99446	52
		78		80			
9	9.20145	78	9.20701	81	0.79299	9.99444	51
10	9.20225	78	9.20782	81	0.79218	9.99442	50
11	9.20302	79	9.20862	80	0.79138	9.99440	49
		78		80			
12	9.20380	78	9.20942	80	0.79058	9.99438	48
13	9.20458	78	9.21022	80	0.78978	9.99436	47
14	9.20535	77	9.21102	80	0.78898	9.99434	46
		78		80			
15	9.20613	78	9.21182	79	0.78818	9.99432	45
16	9.20691	77	9.21261	80	0.78739	9.99429	44
17	9.20768	77	9.21341	79	0.78659	9.99427	43
		77		79			
18	9.20845	77	9.21420	79	0.78580	9.99425	42
19	9.20922	77	9.21499	79	0.78501	9.99423	41
20	9.20999	77	9.21578	79	0.78422	9.99421	40
		77		79			
21	9.21076	77	9.21657	79	0.78343	9.99419	39
22	9.21153	77	9.21736	79	0.78264	9.99417	38
23	9.21229	76	9.21814	78	0.78186	9.99415	37
		77		79			
24	9.21306	76	9.21893	78	0.78107	9.99413	36
25	9.21382	76	9.21971	78	0.78029	9.99411	35
26	9.21458	76	9.22049	78	0.77951	9.99409	34
		76		78			
27	9.21534	76	9.22127	78	0.77873	9.99407	33
28	9.21610	75	9.22205	78	0.77795	9.99404	32
29	9.21685	76	9.22283	78	0.77717	9.99402	31
30	9.21761	76	9.22361	78	0.77639	9.99400	30
	Cos. 80		Cos. 80		Tang. 80	Sin. 80	



°	Sin. 9	Dif.	Tang. 9	Dif. c.	Cot. 9	Cos. 9	°
30	9.21761		9.22361		0.77639	9.99400	30
31	9.21836	75	9.22438	77	0.77562	9.99398	29
32	9.21912	76	9.22516	78	0.77484	9.99396	28
		75		77			
33	9.21987	75	9.22593	77	0.77407	9.99394	27
34	9.22062	75	9.22670	77	0.77330	9.99392	26
35	9.22137	75	9.22747	77	0.77253	9.99390	25
		74		77			
36	9.22211	75	9.22824	77	0.77176	9.99388	24
37	9.22286	75	9.22901	77	0.77099	9.99385	23
38	9.22361	75	9.22977	76	0.77023	9.99383	22
		74		77			
39	9.22435	74	9.23054	76	0.76946	9.99381	21
40	9.22509	74	9.23130	76	0.76870	9.99379	20
41	9.22583	74	9.23206	76	0.76794	9.99377	19
		74		77			
42	9.22657	74	8.23283	76	0.76717	9.99375	18
43	9.22731	74	9.23359	76	0.76641	9.99372	17
44	9.22805	74	9.23435	76	0.76565	9.99370	16
		73		75			
45	9.22878	74	9.23510	76	0.76490	9.99368	15
46	9.22952	74	9.23586	76	0.76414	9.99366	14
47	9.23025	73	9.23661	75	0.76339	9.99364	13
		73		76			
48	9.23098	73	9.23737	75	0.76263	9.99362	12
49	9.23171	73	9.23812	75	0.76188	9.99359	11
50	9.23244	73	9.23887	75	0.76113	9.99357	10
		73		75			
51	9.23317	73	9.23962	75	0.76038	9.99355	9
52	9.23390	72	9.24037	75	0.75963	9.99353	8
53	9.23462	72	9.24112	75	0.75888	9.99351	7
		73		74			
54	9.23535	72	9.24186	75	0.75814	9.99348	6
55	9.23607	72	9.24261	75	0.75739	9.99346	5
56	9.23679	72	9.24335	74	0.75665	9.99344	4
		73		75			
57	9.23752	71	9.24410	74	0.75590	9.99342	3
58	9.23823	72	9.24484	74	0.75516	9.99340	2
59	9.23895	72	9.24558	74	0.75442	9.99337	1
60	9.23967	72	9.24632	74	0.75368	9.99335	0
	Cos. 80		Cot. 80		Tang. 80	Sin. 80	

'	Sin. 10	Dif.	Tang. 10	Dif. c.	Cot. 10	Cos. 10	'
0	9.23967		9.24652		0.75368	9.99335	60
1	9.24039	72	9.24706	74	0.75294	9.99333	59
2	9.24110	71	9.24779	73	0.75221	9.99331	58
3	9.24181	71	9.24853	74	0.75147	9.99328	57
4	9.24253	72	9.24926	73	0.75074	9.99326	56
5	9.24324	71	9.25000	74	0.75000	9.99324	55
6	9.24395	71	9.25073	73	0.74927	9.99322	54
7	9.24466	71	9.25146	73	0.74854	9.99319	53
8	9.24536	70	9.25219	73	0.74781	9.99317	52
		71		73			
9	9.24607	70	9.25292	73	0.74708	9.99315	51
10	9.24677	70	9.25365	73	0.74635	9.99313	50
11	9.24748	71	9.25437	72	0.74563	9.99310	49
		70		73			
12	9.24818	70	9.25510	72	0.74490	9.99308	48
13	9.24888	70	9.25582	73	0.74418	9.99306	47
14	9.24958	70	9.25655	73	0.74345	9.99304	46
		70		72			
15	9.25028	70	9.25727	72	0.74273	9.99301	45
16	9.25098	70	9.25799	72	0.74201	9.99299	44
17	9.25168	70	9.25871	72	0.74129	9.99297	43
		69		72			
18	9.25237	70	9.25943	72	0.74057	9.99294	42
19	9.25307	69	9.26015	71	0.73985	9.99292	41
20	9.25376	69	9.26086	71	0.73914	9.99290	40
		69		72			
21	9.25445	69	9.26158	71	0.73842	9.99288	39
22	9.25514	69	9.26229	71	0.73771	9.99285	38
23	9.25583	69	9.26301	72	0.73699	9.99283	37
		69		71			
24	9.25652	69	9.26372	71	0.73628	9.99281	36
25	9.25721	69	9.26443	71	0.73557	9.99278	35
26	9.25790	69	9.26514	71	0.73486	9.99276	34
		68		71			
27	9.25858	69	9.26585	70	0.73415	9.99274	33
28	9.25927	68	9.26655	71	0.73345	9.99271	32
29	9.25995	68	9.26726	71	0.73274	9.99269	31
30	9.26063	68	9.26797	71	0.73203	9.99267	30
	Cos. 79		Cot. 79		Tang. 79	Sin. 79	

?	Sin. 10	Dif.	Tang. 10	Dif. c.	Cot. 10	Cos. 10	?
30	9.26063	68	9.26797	70	0.73203	9.99267	30
31	9.26131	68	9.26867	70	0.73133	9.99264	29
32	9.26199	68	9.26937	71	0.73063	9.99262	28
33	9.26267	68	9.27008	70	0.72992	9.99260	27
34	9.26335	68	9.27078	70	0.72922	9.99257	26
35	9.26403	67	9.27148	70	0.72852	9.99255	25
36	9.26470	68	9.27218	70	0.72782	9.99252	24
37	9.26538	67	9.27288	69	0.72712	9.99250	23
38	9.26605	67	9.27357	70	0.72645	9.99248	22
39	9.26672	67	9.27427	69	0.72573	9.99245	21
40	9.26739	67	9.27496	70	0.72504	9.99243	20
41	9.26806	67	9.27566	69	0.72434	9.99241	19
42	9.26873	67	9.27635	69	0.72365	9.99238	18
43	9.26940	67	9.27704	69	0.72296	9.99236	17
44	9.27007	66	9.27773	69	0.72227	9.99233	16
45	9.27073	67	9.27842	69	0.72158	9.99231	15
46	9.27140	66	9.27911	69	0.72089	9.99229	14
47	9.27206	67	9.27980	69	0.72020	9.99226	13
48	9.27273	66	9.28049	68	0.71951	9.99224	12
49	9.27339	66	9.28117	69	0.71883	9.99221	11
50	9.27405	66	9.28186	68	0.71814	9.99219	10
51	9.27471	66	9.28254	69	0.71746	9.99217	9
52	9.27537	65	9.28323	68	0.71677	9.99214	8
53	9.27602	66	9.28391	68	0.71609	9.99212	7
54	9.27668	66	9.28459	68	0.71541	9.99209	6
55	9.27734	65	9.28527	68	0.71473	9.99207	5
56	9.27799	65	9.28595	67	0.71405	9.99204	4
57	9.27864	66	9.28662	68	0.71338	9.99202	3
58	9.27930	65	9.28730	68	0.71270	9.99200	2
59	9.27995	65	9.28798	67	0.71202	9.99197	1
60	9.28060		9.28865		0.71135	9.99195	0
	Cos. 79		Cot. 79		Tang. 79	Sin. 79	



	Sin. 11	Dif.	Tang. 11	Dif. c.	Cot. 11	Cos. 11	
0	9.28060		9.28865		0.71135	9.99195	60
1	9.28125	65	9.28933	68	0.71067	9.99192	59
2	9.28190	65	9.29000	67	0.71000	9.99190	58
		64		67			
3	9.28254	65	9.29067	67	0.70933	9.99187	57
4	9.28319	65	9.29134	67	0.70866	9.99185	56
5	9.28384	65	9.29201	67	0.70799	9.99182	55
		64		67			
6	9.28448	64	9.29268	67	0.70732	9.99180	54
7	9.28512	65	9.29335	67	0.70665	9.99177	53
8	9.28577	65	9.29402	67	0.70598	9.99175	52
		64		66			
9	9.28641	64	9.29468	67	0.70532	9.99172	51
10	9.28705	64	9.29535	66	0.70465	9.99170	50
11	9.28769	64	9.29601	66	0.70399	9.99167	49
		64		67			
12	9.28833	63	9.29668	66	0.70332	9.99165	48
13	9.28896	64	9.29734	66	0.70266	9.99162	47
14	9.28960	64	9.29800	66	0.70200	9.99160	46
		64		66			
15	9.29024	63	9.29866	66	0.70134	9.99157	45
16	9.29087	63	9.29932	66	0.70068	9.99155	44
17	9.29150	64	9.29998	66	0.70002	9.99152	43
		63		66			
18	9.29214	63	9.30064	66	0.96936	9.99150	42
19	9.29277	63	9.30130	65	0.96870	9.99147	41
20	9.29340	63	9.30195	66	0.96805	9.99145	40
		63		66			
21	9.29403	63	9.30261	65	0.96739	9.99142	39
22	9.29466	63	9.30326	65	0.96674	9.99140	38
23	9.29529	63	9.30391	65	0.96609	9.99137	37
		62		66			
24	9.29591	63	9.30457	65	0.69543	9.99135	36
25	9.29654	62	9.30522	65	0.69478	9.99132	35
26	9.29716	63	9.30587	65	0.69413	9.99130	34
		63		65			
27	9.29779	62	9.30652	65	0.69348	9.99127	33
28	9.29841	62	9.30717	65	0.69283	9.99124	32
29	9.29903	63	9.30782	64	0.69218	9.99121	31
30	9.29966	63	9.30846	64	0.69154	9.99119	30
	Cos. 78		Cot. 78		Tang. 78	Sin. 78	



	Sin. 11	Dif.	Tang. 11	Dif.c.	Cot. 11	Cos. 11	
30	9.29966		9.30846		0.69154	9.99119	30
31	9.30028	62	9.30911	65	0.69089	9.99117	29
32	9.30090	62	9.30975	64	0.69025	9.99114	28
		61		65			
33	9.30151		9.31040		0.68960	9.99112	27
34	9.30213	62	9.31104	64	0.68896	9.99109	26
35	9.30275	62	9.31168	64	0.68832	9.99106	25
		61		65			
36	9.30336		9.31233		0.68767	9.99104	24
37	9.30398	62	9.31297	64	0.68703	9.99101	23
38	9.30459	61	9.31361	64	0.68639	9.99099	22
		62		64			
39	9.30521		9.31425		0.68575	9.99096	21
40	9.30582	61	9.31489	64	0.68511	9.99093	20
41	9.30643	61	9.31552	63	0.68448	9.99091	19
		61		64			
42	9.30704		9.31616		0.68384	9.99088	18
43	9.30765	61	9.31679	63	0.68321	9.99086	17
44	9.30826	61	9.31743	64	0.68257	9.99083	16
		61		63			
45	9.30887		9.31806		0.68194	9.99080	15
46	9.30947	60	9.31870	64	0.68130	9.99078	14
47	9.31008	61	9.31935	63	0.68067	9.99075	13
		60		65			
48	9.31068		9.31996		0.68004	9.99072	12
49	9.31129	61	9.32059	63	0.67941	9.99070	11
50	9.31189	60	9.32122	63	0.67878	9.99067	10
		61		63			
51	9.31250		9.32185		0.67815	9.99064	9
52	9.31310	60	9.32248	63	0.67752	9.99062	8
53	9.31370	60	9.32311	63	0.67689	9.99059	7
		60		62			
54	9.31430		9.32373		0.67627	9.99056	6
55	9.31490	60	9.32436	63	0.67564	9.99054	5
56	9.31549	59	9.32498	62	0.67502	9.99051	4
		60		63			
57	9.31609		9.32561		0.67439	9.99048	3
58	9.31669	60	9.32623	62	0.67377	9.99046	2
59	9.31728	59	9.32685	62	0.67315	9.99043	1
60	9.31788	60	9.32747	62	0.67253	9.99040	0
	Cos. 78		Cot. 78		Tang. 58	Sin. 78	

'	Sin. 12	Dif.	Tang. 12	Dif. c.	Cot. 12	Cos. 12	'
0	9.31788	59	9.32747	63	0.67253	9.99040	60
1	9.31847	60	9.32810	62	0.67190	9.99038	59
2	9.31907	59	9.32872	61	0.67128	9.99035	58
3	9.31966	59	9.32933	62	0.67067	9.99032	57
4	9.32025	59	9.32995	62	0.67005	9.99030	56
5	9.32084	59	9.33057	62	0.66943	9.99027	55
6	9.32143	59	9.33119	61	0.66881	9.99024	54
7	9.32202	59	9.33180	62	0.66820	9.99022	53
8	9.32261	58	9.33242	61	0.66758	9.99019	52
9	9.32319	59	9.33303	62	0.66697	9.99016	51
10	9.32378	59	9.33365	61	0.66635	9.99013	50
11	9.32437	58	9.33426	61	0.66574	9.99011	49
12	9.32495	58	9.33487	61	0.66513	9.99008	48
13	9.32553	59	9.33548	61	0.66452	9.99005	47
14	9.32612	58	9.33609	61	0.66391	9.99002	46
15	9.32670	58	9.33670	61	0.66330	9.98000	45
16	9.32728	58	9.33731	61	0.66269	9.98997	44
17	9.32786	58	9.33792	61	0.66208	9.98994	43
18	9.32844	58	9.33853	60	0.66147	9.98991	42
19	9.32902	58	9.33913	61	0.66087	9.98989	41
20	9.32960	58	9.33974	60	0.66026	9.98986	40
21	9.33018	57	9.34034	61	0.65966	9.98983	39
22	9.33075	58	9.34095	60	0.65905	9.98980	38
23	9.33133	57	9.34155	60	0.65845	9.98978	37
24	9.33190	58	9.34215	61	0.65785	9.98975	36
25	9.33248	57	9.34276	60	0.65724	9.98972	35
26	9.33305	57	9.34336	60	0.65664	9.98969	34
27	9.33362	58	9.34396	60	0.65604	9.98967	33
28	9.33420	57	9.34456	60	0.65544	9.98964	32
29	9.33477	57	9.34516	60	0.65484	9.98961	31
30	9.33534	57	9.34576	60	0.65424	9.98958	30
	Cos. 77		Cot. 77		Tang. 77	Sin. 77	

'	Sin. 12	Dif.	Tang. 12	Dif. c.	Cot. 12	Cos. 12	'
30	9.33534		9.34576		0.65424	9.98958	30
31	9.33591	57	9.34635	59	0.65365	9.98955	29
32	9.33647	56	9.34695	60	0.65305	9.98953	28
33	9.33704	57	9.34755	60	0.65245	9.98950	27
34	9.33761	57	9.34814	59	0.65186	9.98947	26
35	9.33818	57	9.34874	60	0.65126	9.98944	25
36	9.33874	56	9.34933	59	0.65067	9.98941	24
37	9.33931	57	9.34992	59	0.65008	9.98938	23
38	9.33987	56	9.35051	59	0.64949	9.98936	22
39	9.34043	56	9.35111	60	0.64889	9.98933	21
40	9.34100	57	9.35170	59	0.64830	9.98930	20
41	9.34156	56	9.35229	59	0.64771	9.98927	19
42	9.34212	56	9.35288	59	0.64712	9.98924	18
43	9.34268	56	9.35347	58	0.64653	9.98921	17
44	9.34324	56	9.35405	58	0.64595	9.98919	16
45	9.34380	56	9.35464	59	0.64536	9.98916	15
46	9.34436	55	9.35523	58	0.64477	9.98913	14
47	9.34491	56	9.35581	59	0.64419	9.98910	13
48	9.34547	55	9.35640	58	0.64360	9.98907	12
49	9.34602	56	9.35698	59	0.64302	9.98904	11
50	9.34658	55	9.35757	58	0.64243	9.98901	10
51	9.34713	56	9.35815	58	0.64185	9.98898	9
52	9.34769	55	9.35873	58	0.64127	9.98896	8
53	9.34824	55	9.35931	58	0.64069	9.98893	7
54	9.34879	55	9.35989	58	0.64011	9.98890	6
55	9.34934	55	9.36047	58	0.63953	9.98887	5
56	9.34989	55	9.36105	58	0.63895	9.98884	4
57	6.35044	55	9.36163	58	0.63837	9.98881	3
58	9.35099	55	9.36221	58	0.63779	9.98878	2
59	9.35154	55	9.36279	57	0.63721	9.98875	1
60	9.35209	55	9.36336		0.63664	9.98872	0
	Cos. 77		Cot. 77		Tang. 77	Sin. 77	



'	Sin. 13	Dif.	Tang. 13	Dif. c.	Cot. 13	Cos. 13	'
0	9.35209		9.36336		0.63664	9.98872	60
1	9.35263	54	9.36394	58	0.63606	9.98869	59
2	9.35318	55	9.36452	58	0.63548	9.98867	58
		55		57			
3	9.35373	54	9.36509	57	0.63491	9.98864	57
4	9.35427	54	9.36566	58	0.63434	9.98861	56
5	9.35481	54	9.36624	57	0.63376	9.98858	55
		55		57			
6	9.35536	54	9.36681	57	0.63319	9.98855	54
7	9.35590	54	9.36738	57	0.63262	9.98852	53
8	9.35644	54	9.36795	57	0.63205	9.98849	52
		54		57			
9	9.35698	54	9.36852	57	0.63148	9.98846	51
10	9.35752	54	9.36909	57	0.63091	9.98843	50
11	9.35806	54	9.36966	57	0.63034	9.98840	49
		54		57			
12	9.35860	54	9.37023	57	0.62977	9.98837	48
13	9.35914	54	9.37080	57	0.62920	9.98834	47
14	9.35968	54	9.37137	57	0.62863	9.98831	46
		54		56			
15	9.36022	53	9.37193	57	0.62807	9.98828	45
16	9.36075	54	9.37250	56	0.62750	9.98825	44
17	9.36129	53	9.37306	57	0.62694	9.98822	43
		54		57			
18	9.36182	54	9.37363	56	0.62637	9.98819	42
19	9.36236	53	9.37419	57	0.62581	9.98816	41
20	9.36289	53	9.37476	56	0.62524	9.98813	40
		53		56			
21	9.36342	53	9.37532	56	0.62468	9.98810	39
22	9.36395	54	9.37588	56	0.62412	9.98807	38
23	9.36449	53	9.37644	56	0.62356	9.98804	37
		55		56			
24	9.36502	53	9.37700	56	0.62300	9.98801	36
25	9.36555	53	9.37756	56	0.62244	9.98798	35
26	9.36608	53	9.37812	56	0.62188	9.98795	34
		52		56			
27	9.36660	53	9.37868	56	0.62132	9.98792	33
28	9.36713	53	9.37924	56	0.62076	9.98789	32
29	9.36766	53	9.37980	56	0.62020	9.98786	31
30	9.36819	53	9.38035	55	0.61965	9.98783	30
	Cos. 76		Cot. 76		Tang. 76	Sin. 76	



'	Sin. 13	Dif.	Tang. 13	Dif. c.	Cot. 13	Cos. 13	'
30	9.36819		9.38035		0.61965	9.98783	30
31	9.36871	52	9.38091	56	0.61909	9.98780	29
32	9.36924	53	9.38147	56	0.61853	9.98777	28
		52		55			
33	9.36976	52	9.38202	55	0.61798	9.98774	27
34	9.37028	52	9.38257	55	0.61743	9.98771	26
35	9.37081	53	9.38313	56	0.61687	9.98768	25
		52		55			
36	9.37133	52	9.38368	55	0.61632	9.98765	24
37	9.37185	52	9.38423	56	0.61577	9.98762	23
38	9.37237	52	9.38479	56	0.61521	9.98759	22
		52		55			
39	9.37289	52	9.38534	55	0.61466	9.98756	21
40	9.37341	52	9.38589	55	0.61411	9.98753	20
41	9.37393	52	9.38644	55	0.61356	9.98750	19
		52		55			
42	9.37445	52	8.38699	55	0.61301	9.98746	18
43	9.37497	52	9.38754	54	0.61246	9.98743	17
44	9.37549	52	9.38808	54	0.61192	9.98740	16
		51		55			
45	9.37600	52	9.38863	55	0.61137	9.98737	15
46	9.37652	51	9.38918	54	0.61082	9.98734	14
47	9.37703	52	9.38972	55	0.61028	9.98731	13
		51		55			
48	9.37755	51	9.39027	55	0.60973	9.98728	12
49	9.37806	52	9.39082	54	0.60918	9.98725	11
50	9.37858	51	9.39136	54	0.60864	9.98722	10
		51		54			
51	9.37909	51	9.39190	55	0.60810	9.98719	9
52	9.37960	51	9.39245	54	0.60755	9.98715	8
53	9.38011	51	9.39299	54	0.60701	9.98712	7
		51		54			
54	9.38062	51	9.39353	54	0.60647	9.98709	6
55	9.38113	51	9.39407	54	0.60593	9.98706	5
56	9.38164	51	9.39461	54	0.60539	9.98703	4
		51		54			
57	9.38215	51	9.39515	54	0.60485	9.98700	3
58	9.38266	51	9.39569	54	0.60431	9.98697	2
59	9.38317	51	9.39623	54	0.60377	9.98694	1
60	9.38368	51	9.39677	54	0.60323	9.98690	0
	Cos. 76		Cot. 76		Tang. 76	Sin. 76	

'	Sin. 14	Dif.	Tang. 14	Dif. c.	Cot. 14	Cos. 14	'
0	9.38368		9.39677		0.60323	9.98690	60
1	9.38418	50	9.39731	54	0.60269	9.98687	59
2	9.38469	51	9.39785	54	0.60215	9.98684	58
		50		53			
3	9.38519	51	9.39838	54	0.60162	9.98681	57
4	9.38570	50	9.39892	53	0.60108	9.98678	56
5	9.38620	50	9.39945	54	0.60055	9.98675	55
		50		54			
6	9.38670	51	9.39999	53	0.60001	9.98671	54
7	9.38721	50	9.40052	54	0.59948	9.98668	53
8	9.38771	50	9.40106	53	0.59894	9.98665	52
		50		53			
9	9.38821	50	9.40159	53	0.59841	9.98662	51
10	9.38871	50	9.40212	54	0.59788	9.98659	50
11	9.38921	50	9.40266	53	0.59734	9.98656	49
		50		53			
12	9.38971	50	9.40319	53	0.59681	9.98653	48
13	9.39021	50	9.40372	53	0.59628	9.98649	47
14	9.39071	50	9.40425	53	0.59575	9.98646	46
		50		53			
15	9.39121	49	9.40478	53	0.59522	9.98643	45
16	9.39170	50	9.40531	53	0.59469	9.98640	44
17	9.39220	50	9.40584	53	0.59416	9.98636	43
		50		52			
18	9.39270	49	9.40636	53	0.59364	9.98633	42
19	9.39319	50	9.40689	53	0.59311	9.98630	41
20	9.39369	49	9.40742	53	0.59258	9.98627	40
		49		53			
21	9.39418	49	9.40795	52	0.59205	9.98623	39
22	9.39467	50	9.40847	53	0.59153	9.98620	38
23	9.39517	49	9.40900	52	0.59100	9.98617	37
		49		52			
24	9.39566	49	9.40952	53	0.59048	9.98614	36
25	9.39615	49	9.41005	52	0.58995	9.98610	35
26	9.39664	49	9.41057	52	0.58943	9.98607	34
		49		52			
27	9.39713	49	9.41109	52	0.58891	9.98604	33
28	9.39762	49	9.41161	53	0.58839	9.98601	32
29	9.39811	49	9.41214	52	0.58786	9.98597	31
30	9.39860	49	9.41266	52	0.58734	9.98594	30
	Cos. 75		Cot. 75		Tang. 75	Sin. 75	

'	Sin. 14	Dif.	Tang. 14	Dif. c.	Cot. 14	Cos. 14	'
30	9.59860	49	9.41266	52	0.58734	9.98594	30
31	9.59909	49	9.41318	52	0.58682	9.98591	29
52	9.59958	48	9.41370	52	0.58630	9.98588	28
33	9.40006	49	9.41422	52	0.58578	9.98584	27
34	9.40055	48	9.41474	52	0.58526	9.98581	26
55	9.40103	49	9.41526	52	0.58474	9.98578	25
36	9.40152	48	9.41578	51	0.58422	9.98574	24
57	9.40200	49	9.41629	52	0.58371	9.98571	23
38	9.40249	48	9.41681	52	0.58319	9.98568	22
39	9.40297	49	9.41733	51	0.58267	9.98565	21
40	9.40346	48	9.41784	52	0.58216	9.98561	20
41	9.40394	48	9.41836	51	0.58164	9.98558	19
42	9.40442	48	9.41887	52	0.58113	9.98555	18
43	9.40490	48	9.41939	51	0.58061	9.98551	17
44	9.40538	48	9.41990	51	0.58010	9.98548	16
45	9.40586	48	9.42041	52	0.57969	9.98545	15
46	9.40634	48	9.42093	51	0.57907	9.98541	14
47	9.40682	48	9.42144	51	0.57856	9.98538	13
48	9.40730	48	9.42195	51	0.57805	9.98535	12
49	9.40778	47	9.42246	51	0.57754	9.98531	11
50	9.40825	48	9.42297	51	0.57703	9.98528	10
51	9.40873	48	9.42348	51	0.57652	9.98525	9
52	9.40921	47	9.42399	51	0.57601	9.98521	8
53	9.40968	48	9.42450	51	0.57550	9.98518	7
54	9.41016	47	9.42501	51	0.57499	9.98515	6
55	9.41063	48	9.42552	51	0.57448	9.98511	5
56	9.41111	47	9.42603	50	0.57397	9.98508	4
57	9.41158	47	9.42653	51	0.57347	9.98505	3
58	9.41205	47	9.42704	51	0.57296	9.98501	2
59	9.41252	48	9.42755	51	0.57245	9.98498	1
60	9.41300		9.42805	50	0.57195	9.98494	0
	Cos. 75		Cot. 75		Tang. 75	Sin. 75	



'	Sin. 15	Dif.	Tang. 15	Dif. c.	Cot. 15	Cos. 15	'
0	9.41300		9.42805		0.57195	9.98494	60
1	9.41347	47	9.42856	51	0.57144	9.98491	59
2	9.41394	47	9.42906	50	0.57094	9.98488	58
		47		51			
3	9.41441	47	9.42957	50	0.57043	9.98484	57
4	9.41488	47	9.43007	50	0.56993	9.98481	56
5	9.41535	47	9.43057	50	0.56943	9.98477	55
		47		51			
6	9.41582	46	9.43108	50	0.56892	9.98474	54
7	9.41628	46	9.43158	50	0.56842	9.98471	53
8	9.41675	47	9.43208	50	0.56792	9.98467	52
		47		50			
9	9.41722	46	9.43258	50	0.56742	9.98464	51
10	9.41768	46	9.43308	50	0.56692	9.98460	50
11	9.41815	47	9.43358	50	0.56642	9.98457	49
		46		50			
12	9.41861	47	9.43408	50	0.56592	9.98453	48
13	9.41908	47	9.43458	50	0.56542	9.98450	47
14	9.41954	46	9.43508	50	0.56492	9.98447	46
		47		50			
15	9.42001	46	9.43558	49	0.56442	9.98443	45
16	9.42047	46	9.43607	50	0.56393	9.98440	44
17	9.42093	46	9.43657	50	0.56343	9.98436	43
		47		50			
18	9.42140	46	9.43707	49	0.56293	9.98433	42
19	9.42186	46	9.43756	49	0.56244	9.98429	41
20	9.42232	46	9.43806	50	0.56194	9.98426	40
		46		49			
21	9.42278	46	9.43855	50	0.56145	9.98422	39
22	9.42324	46	9.43905	49	0.56095	9.98419	38
23	9.42370	46	9.43954	49	0.56046	9.98415	37
		46		50			
24	9.42416	45	9.44004	49	0.55996	9.98412	36
25	9.42461	46	9.44053	49	0.55947	9.98409	35
26	9.42507	46	9.44102	49	0.55898	9.98405	34
		46		49			
27	9.42553	46	9.44151	50	0.55849	9.98402	33
28	9.42599	45	9.44201	49	0.55799	9.98398	32
29	9.42644	46	9.44250	49	0.55750	9.98395	31
30	9.42690	46	9.44299	49	0.55701	9.98391	30
	Cos. 74		Cot. 74		Tang. 74	Sin. 74	



'	Sin. 15	Dif.	Tang. 15	Dif.c.	Cot. 15	Cos. 15	'
30	9.42690	45	9.44299	49	0.55701	9.98391	30
31	9.42735	46	9.44348	49	0.55652	9.98388	29
32	9.42781	45	9.44397	49	0.55603	9.98384	28
33	9.42826	46	9.44446	49	0.55554	9.98381	27
34	9.42872	45	9.44495	49	0.55505	9.98377	26
35	9.42917	45	9.44544	48	0.55456	9.98373	25
36	9.42962	46	9.44592	49	0.55408	9.98370	24
37	9.43008	45	9.44641	49	0.55359	9.98366	23
38	9.43053	45	9.44690	48	0.55310	9.98363	22
39	9.43098	45	9.44738	49	0.55262	9.98359	21
40	9.43143	45	9.44787	49	0.55213	9.98356	20
41	9.43188	45	9.44836	49	0.55164	9.98352	19
42	9.43233	45	9.44884	48	0.55116	9.98349	18
43	9.43278	45	9.44933	49	0.55067	9.98345	17
44	9.43323	44	9.44981	48	0.55019	9.98342	16
45	9.43367	45	9.45029	48	0.54971	9.98338	15
46	9.43412	45	9.45078	49	0.54922	9.98334	14
47	9.43457	45	9.45126	48	0.54874	9.98331	13
48	9.43502	44	9.45174	48	0.54826	9.98327	12
49	9.43546	45	9.45222	48	0.54778	9.98324	11
50	9.43591	44	9.45271	49	0.54729	9.98320	10
51	9.43635	45	9.45319	48	0.54681	9.98317	9
52	9.43680	44	9.45367	48	0.54633	9.98313	8
53	9.43724	45	9.45415	48	0.54585	9.98309	7
54	9.43769	44	9.45463	48	0.54537	9.98306	6
55	9.43813	44	9.45511	48	0.54489	9.98302	5
56	9.43857	44	9.45559	48	0.54441	9.98299	4
57	9.43901	44	9.45606	47	0.54394	9.98295	3
58	9.43946	45	9.45654	48	0.54346	9.98291	2
59	9.43990	44	9.45702	48	0.54298	9.98288	1
60	9.44034	44	9.45750	48	0.54250	9.98284	0
	Cos. 74		Cot. 74		Tang. 74	Sin. 74	

'	Sin. 16	Dif.	Tang. 16	Dif. c.	Cot. 16	Cos. 16	'
0	9.44034		9.45750		0.54250	9.98284	60
1	9.44078	44	9.45797	47	0.54203	9.98281	59
2	9.44122	44	9.45845	48	0.54155	9.98277	58
		44		47			
3	9.44166	44	9.45892	48	0.54108	9.98273	57
4	9.44210	43	9.45940	47	0.54060	9.98270	56
5	9.44253	43	9.45987	47	0.54013	9.98266	55
		44		48			
6	9.44297	44	9.46035	47	0.53965	9.98262	54
7	9.44341	44	9.46082	47	0.53918	9.98259	53
8	9.44385	44	9.46130	48	0.53870	9.98255	52
		43		47			
9	9.44428	44	9.46177	47	0.53823	9.98251	51
10	9.44472	44	9.46224	47	0.53776	9.98248	50
11	9.44516	44	9.46271	47	0.53729	9.98244	49
		43		48			
12	9.44559	43	9.46319	47	0.53681	9.98240	48
13	9.44602	44	9.46366	47	0.53633	9.98237	47
14	9.44646	44	9.46413	47	0.53587	9.98233	46
		43		47			
15	9.44689	44	9.46460	47	0.53540	9.98229	45
16	9.44733	43	9.46507	47	0.53493	9.98226	44
17	9.44776	43	9.46554	47	0.53446	9.98222	43
		43		47			
18	9.44819	43	9.46601	47	0.53399	9.98218	42
19	9.44862	43	9.46648	46	0.53352	9.98215	41
20	9.44905	43	9.46694	46	0.53306	9.98211	40
		43		47			
21	9.44948	44	9.46741	47	0.53259	9.98207	39
22	9.44992	43	9.46788	47	0.53212	9.98204	38
23	9.45035	43	9.46835	47	0.53165	9.98200	37
		42		46			
24	9.45077	43	9.46881	47	0.53119	9.98196	36
25	9.45120	43	9.46928	47	0.53072	9.98192	35
26	9.45163	43	9.46975	47	0.53025	9.98189	34
		43		46			
27	9.45206	43	9.47021	47	0.52979	9.98185	33
28	9.45249	43	9.47068	46	0.52932	9.98181	32
29	9.45292	42	9.47114	46	0.52886	9.98177	31
30	9.45334		9.47160	46	0.52840	9.98174	30
	Cos. 75		Cot. 73		Tang. 75	Sin. 73	

'	Sin. 16	Dif.	Tang. 16	Dif. c.	Cot. 16	Cos. 16	'
30	9.45334	45	9.47160	47	0.52840	9.98174	30
31	9.45377	42	9.47207	46	0.52793	9.98170	29
32	9.45419	43	9.47253	46	0.52747	9.98166	28
33	9.45462	42	9.47299	47	0.52701	9.98162	27
34	9.45504	43	9.47346	46	0.52654	9.98159	26
35	9.45547	42	9.47392	46	0.52608	9.98155	25
36	9.45589	43	9.47438	46	0.52562	9.98151	24
37	9.45632	42	9.47484	46	0.52516	9.98147	23
38	9.45674	42	9.47530	46	0.52470	9.98144	22
39	9.45716	42	9.47576	46	0.52424	9.98140	21
40	9.45758	43	9.47622	46	0.52378	9.98136	20
41	9.45801	42	9.47668	46	0.52332	9.98132	19
42	9.45843	42	9.47714	46	0.52286	9.98129	18
43	9.45885	42	9.47760	46	0.52240	9.98125	17
44	9.45927	42	9.47806	46	0.52194	9.98121	16
45	9.45969	42	9.47852	45	0.52148	9.98117	15
46	9.46011	42	9.47897	46	0.52103	9.98113	14
47	9.46053	42	9.47943	46	0.52057	9.98110	13
48	9.46095	41	9.47989	46	0.52011	9.98106	12
49	9.46136	42	9.48035	45	0.51965	9.98102	11
50	9.46178	42	9.48080	46	0.51920	9.98098	10
51	9.46220	42	9.48126	45	0.51874	9.98094	9
52	9.46262	41	9.48171	46	0.51829	9.98090	8
53	9.46303	42	9.48217	45	0.51783	9.98087	7
54	9.46345	41	9.48262	45	0.51738	9.98083	6
55	9.46386	42	9.48307	46	0.51693	9.98079	5
56	9.46428	41	9.48353	45	0.51647	9.98075	4
57	9.46469	42	9.48398	45	0.51602	9.98071	3
58	9.46511	41	9.48443	46	0.51557	9.98067	2
59	9.46552	42	9.48489	45	0.51511	9.98063	1
60	9.46594	42	9.48534	45	0.51466	9.98060	0
	Cos. 73		Cot. 73		Tang. 73	Sin. 73	



'	Sin. 17	Dif.	Tang. 17	Dif. c.	Cot. 17	Cos. 17	'
0	9.46594		9.48534		0.51466	9.98060	60
1	9.46635	41	9.48579	45	0.51421	9.98056	59
2	9.46676	41	9.48624	45	0.51376	9.98052	58
		41		45			
3	9.46717	41	9.48669	45	0.51331	9.98048	57
4	9.46758	41	9.48714	45	0.51286	9.98044	56
5	9.46800	42	9.48759	45	0.51241	9.98040	55
		41		45			
6	9.46841	41	9.48804	45	0.51196	9.98036	54
7	9.46882	41	9.48849	45	0.51151	9.98032	53
8	9.46923	41	9.48894	45	0.51106	9.98029	52
		41		45			
9	9.46964	41	9.48939	45	0.51061	9.98025	51
10	9.47005	41	9.48984	45	0.51016	9.98021	50
11	9.47045	40	9.49029	45	0.50971	9.98017	49
		41		44			
12	9.47086	41	9.49073	45	0.50927	9.98013	48
13	9.47127	41	9.49118	45	0.50882	9.98009	47
14	9.47168	41	9.49163	45	0.50837	9.98005	46
		41		44			
15	9.47209	40	9.49207	45	0.50793	9.98001	45
16	9.47249	41	9.49252	44	0.50748	9.97997	44
17	9.47290	41	9.49296	45	0.50704	9.97993	43
		40		45			
18	9.47330	41	9.49341	44	0.50659	9.97989	42
19	9.47371	40	9.49385	45	0.50615	9.97986	41
20	9.47411	40	9.49430	44	0.50570	9.97982	40
		41		44			
21	9.47452	40	9.49474	45	0.50526	9.97978	39
22	9.47492	41	9.49519	44	0.50481	9.97974	38
23	9.47533	41	9.49563	44	0.50437	9.97970	37
		40		44			
24	9.47573	40	9.49607	45	0.50393	9.97966	36
25	9.47613	41	9.49652	44	0.50348	9.97962	35
26	9.47654	41	9.49696	44	0.50304	9.97958	34
		40		44			
27	9.47694	40	9.49740	44	0.50260	9.97954	33
28	9.47734	40	9.49784	44	0.50216	9.97950	32
29	9.47774	40	9.49828	44	0.50172	9.97946	31
30	9.47814	40	9.49872	44	0.50128	9.97942	30
	Cos. 72		Cot. 72		Tang. 72	Sin. 72	



'	Sin. 17	Dif.	Tang. 17	Dif. c.	Cot. 17	Cos. 17	'
30	9.47814		9.49872		0.50128	9.97942	30
31	9.47854	40	9.49916	44	0.50084	9.97938	29
32	9.47894	40	9.49960	44	0.50040	9.97934	28
		40		44			
33	9.47934	40	9.50004	44	0.49996	9.97930	27
34	9.47974	40	9.50048	44	0.49952	9.97926	26
35	9.48014	40	9.50092	44	0.49908	9.97922	25
		40		44			
36	9.48054	40	9.50136	44	0.49864	9.97918	24
37	9.48094	40	9.50180	44	0.49820	9.97914	23
38	9.48133	39	9.50223	43	0.49777	9.97910	22
		40		44			
39	9.48173	40	9.50267	44	0.49733	9.97906	21
40	9.48213	40	9.50311	44	0.49689	9.97902	20
41	9.48252	39	9.50355	44	0.49645	9.97898	19
		40		43			
42	9.48292	40	9.50398	44	0.49602	9.97894	18
43	9.48332	40	9.50442	44	0.49558	9.97890	17
44	9.48371	39	9.50485	43	0.49515	9.97886	16
		40		44			
45	9.48411	40	9.50529	44	0.49471	9.97882	15
46	9.48450	39	9.50572	43	0.49428	9.97878	14
47	9.48490	40	9.50616	44	0.49384	9.97874	13
		39		43			
48	9.48529	40	9.50659	44	0.49341	9.97870	12
49	9.48568	39	9.50703	44	0.49297	9.97866	11
50	9.48607	39	9.50746	43	0.49254	9.97861	10
		40		43			
51	9.48647	40	9.50789	44	0.49211	9.97857	9
52	9.48686	39	9.50833	44	0.49167	9.97853	8
53	9.48725	39	9.50876	43	0.49124	9.97849	7
		39		43			
54	9.48764	39	9.50919	45	0.49081	9.97845	6
55	9.48803	39	9.50962	43	0.49038	9.97841	5
56	9.48842	39	9.51005	43	0.48995	9.97837	4
		39		43			
57	9.48881	39	9.51048	44	0.48952	9.97833	3
58	9.48920	39	9.51092	43	0.48908	9.97829	2
59	9.48959	39	9.51135	43	0.48865	9.97825	1
60	9.48998	39	9.51178	43	0.48822	9.97821	0
	Cos. 72		Cot. 72		Tang. 72	Sin. 72	

'	Sin. 18	Dif.	Tang. 18	Dif. c.	Cot. 18	Cos. 18	'
0	9.48998	39	9.51178	43	0.48822	9.97821	60
1	9.49037	39	9.51221	43	0.48779	9.97817	59
2	9.49076	39	9.51264	42	0.48736	9.97812	58
3	9.49115	38	9.51306	43	0.48694	9.97808	57
4	9.49153	39	9.51349	43	0.48651	9.97804	56
5	9.49192	39	9.51392	43	0.48608	9.97800	55
6	9.49231	38	9.51435	43	0.48565	9.97796	54
7	9.49269	39	9.51478	42	0.48522	9.97792	53
8	9.49308	39	9.51520	43	0.48480	9.97788	52
9	9.49347	38	9.51563	43	0.48437	9.97784	51
10	9.49385	39	9.51606	42	0.48394	9.97779	50
11	9.49424	38	9.51648	43	0.48352	9.97775	49
12	9.49462	38	9.51691	43	0.48309	9.97771	48
13	9.49500	39	9.51734	42	0.48266	9.97767	47
14	9.49539	38	9.51776	43	0.48224	9.97763	46
15	9.49577	38	9.51819	42	0.48181	9.97759	45
16	9.49615	39	9.51861	42	0.48139	9.97754	44
17	9.49654	38	9.51903	43	0.48097	9.97750	43
18	9.49692	38	9.51946	42	0.48054	9.97746	42
19	9.49730	38	9.51988	43	0.48012	9.97742	41
20	9.49768	38	9.52031	42	0.47969	9.97738	40
21	9.49806	38	9.52073	42	0.47927	9.97734	39
22	9.49844	38	9.52115	42	0.47885	9.97729	38
23	9.49882	38	9.52157	42	0.47843	9.97725	37
24	9.49920	38	9.52200	42	0.47800	9.97721	36
25	9.49958	38	9.52242	42	0.47758	9.97717	35
26	9.49996	38	9.52284	42	0.47716	9.97713	34
27	9.50034	38	9.52326	42	0.47674	9.97708	33
28	9.50072	38	9.52368	42	0.47632	9.97704	32
29	9.50110	38	9.52410	42	0.47590	9.97700	31
30	9.50148	38	9.52452	42	0.47548	9.97696	30
	Cos. 71		Cot. 71		Tang. 71	Sin. 71	

'	Sin. 18	Dif.	Tang. 18	D. c.	Cot. 18	Cos. 18	Dif.	'
30	9.50148		9.52452		0.47548	9.97696		30
31	9.50185	37	9.52494	42	0.47506	9.97691	5	29
32	9.50223	38	9.52536	42	0.47464	9.97687	4	28
		38		42			4	
33	9.50261		9.52578		0.47422	9.97683		27
34	9.50298	37	9.52620	42	0.47380	9.97679	4	26
35	9.50336	38	9.52661	41	0.47339	9.97674	5	25
		38		42			4	
36	9.50374		9.52703		0.47297	9.97670		24
37	9.50411	37	9.52745	42	0.47255	9.97666	4	23
38	9.50449	38	9.52787	42	0.47213	9.97662	4	22
		37		42			5	
39	9.50486		9.52829		0.47171	9.97657		21
40	9.50523	37	9.52870	41	0.47130	9.97653	4	20
41	9.50561	38	9.52912	42	0.47088	9.97649	4	19
		37		41			4	
42	9.50598		8.52953		0.47047	9.97645		18
43	9.50635	37	9.52995	42	0.47005	9.97640	5	17
44	9.50673	38	9.53037	42	0.46963	9.97636	4	16
		37		41			4	
45	9.50710		9.53078		0.46922	9.97632		15
46	9.50747	37	9.53120	42	0.46880	9.97628	4	14
47	9.50784	37	9.53161	41	0.46839	9.97623	5	13
		37		41			4	
48	9.50821		9.53202		0.46798	9.97619		12
49	9.50858	37	9.53244	42	0.46756	9.97615	4	11
50	9.50896	38	9.53285	41	0.46715	9.97610	5	10
		37		42			4	
51	9.50933		9.53327		0.46673	9.97606		9
52	9.50970	37	9.53368	41	0.46632	9.97602	4	8
53	9.51007	37	9.53409	41	0.46591	9.97597	5	7
		36		41			4	
54	9.51043		9.53450		0.46550	9.97593		6
55	9.51080	37	9.53492	42	0.46508	9.97589	4	5
56	9.51117	37	9.53533	41	0.46467	9.97584	5	4
		37		41			4	
57	9.51154		9.53574		0.46426	9.97580		3
58	9.51191	37	9.53615	41	0.46385	9.97576	4	2
59	9.51227	36	9.53656	41	0.46344	9.97571	5	1
60	9.51264	37	9.53697	41	0.46303	9.97567	4	0
	Cos. 71		Cot. 71		Tang. 71	Sin. 71		



'	Sin. 19	Dif.	Tang. 19	D.c.	Cot. 19	Cos. 13	Dif.	'
0	9.51264		9.53697		0.46303	9.97567		60
1	9.51301	37	9.53738	41	0.46262	9.97563	4	59
2	9.51338	37	9.53779	41	0.46221	9.97558	5	58
		36		41			4	
3	9.51374	37	9.53820	41	0.46180	9.97554	4	57
4	9.51411	36	9.53861	41	0.46135	9.97550	4	56
5	9.51447	36	9.53902	41	0.46098	9.97545	5	55
		37		41			4	
6	9.51484	36	9.53943	41	0.46057	9.97541	4	54
7	9.51520	37	9.53984	41	0.46016	9.97536	5	53
8	9.51557	36	9.54025	41	0.45975	9.97532	4	52
		36		40			4	
9	9.51593	36	9.54065	41	0.45935	9.97528	4	51
10	9.51629	37	9.54106	41	0.45894	9.97523	5	50
11	9.51666	36	9.54147	41	0.45855	9.97519	4	49
		36		40			4	
12	9.51702	36	9.54187	41	0.45813	9.97515	4	48
13	9.51738	36	9.54228	41	0.45772	9.97510	5	47
14	9.51774	36	9.54269	41	0.45731	9.97506	4	46
		37		40			5	
15	9.51811	36	9.54309	41	0.45691	9.97501	4	45
16	9.51847	36	9.54350	40	0.45650	9.97497	4	44
17	9.51883	36	9.54390	41	0.45610	9.97492	5	43
		36		41			4	
18	9.51919	36	9.34431	40	0.45569	9.97488	4	42
19	9.51955	36	9.34471	41	0.45529	9.97484	4	41
20	9.51991	36	9.34512	41	0.45488	9.97479	5	40
		36		40			4	
21	9.52027	36	9.54552	41	0.45448	9.97475	4	39
22	9.52063	36	9.54593	41	0.45407	9.97470	5	38
23	9.52099	36	9.54633	40	0.45367	9.97466	4	37
		36		40			5	
24	9.52135	36	9.54673	41	0.45327	9.97461	4	36
25	9.52171	36	9.54714	41	0.45286	9.97457	4	35
26	9.52207	35	9.54754	40	0.45246	9.97453	4	34
		36		40			5	
27	9.52242	36	9.54794	41	0.45206	9.97448	4	33
28	9.52278	36	9.54835	41	0.45165	9.97444	4	32
29	9.52314	36	9.54875	40	0.45125	9.97439	5	31
30	9.52350	36	9.54915	40	0.45085	9.97435	4	30
	Cos. 70		Cot. 70		Tang. 70	Sin. 70		

	Sin. 19	Dif.	Tang. 19	D. c.	Cot. 19	Cos. 19	Dif.	
30	9.52350		9.54915		0.45085	9.97435		30
31	9.52385	35	9.54955	40	0.45045	9.97430	5	29
32	9.52421	36	9.54995	40	0.45005	9.97426	4	28
		35		40			5	
33	9.52456		9.55035		0.44965	9.97421		27
34	9.52492	36	9.55075	40	0.44925	9.97417	4	26
35	9.52527	35	9.55115	40	0.44885	9.97412	5	25
		36		40			4	
36	9.52563		9.55155		0.44845	9.97408		24
37	9.52598	35	9.55195	40	0.44805	9.97403	5	23
38	9.52634	36	9.55235	40	0.44765	9.97399	4	22
		35		40			5	
39	9.52669		9.55275		0.44725	9.97394		21
40	9.52705	36	9.55315	40	0.44685	9.97390	4	20
41	9.52740	35	9.55355	40	0.44645	9.97385	5	19
		36		40			4	
42	9.52775		8.55395		0.44605	9.97381		18
43	9.52811	35	9.55434	39	0.44566	9.97376	5	17
44	9.52846	36	9.55474	40	0.44526	9.97372	4	16
		35		40			5	
45	9.52881		9.55514		0.44486	9.97367		15
46	9.52916	35	9.55554	40	0.44446	9.97363	4	14
47	9.52951	36	9.55593	39	0.44407	9.97358	5	13
		35		40			5	
48	9.52986		9.55633		0.44367	9.97353		12
49	9.53021	35	9.55673	40	0.44327	9.97349	4	11
50	9.53056	36	9.55712	39	0.44288	9.97344	5	10
		35		40			4	
51	9.53092		9.55752		0.44248	9.97340		9
52	9.53126	34	9.55791	39	0.44209	9.97335	5	8
53	9.53161	35	9.55831	40	0.44169	9.97331	4	7
		36		39			5	
54	9.53196		9.55870		0.44130	9.97326		6
55	9.53231	35	9.55910	40	0.44090	9.97322	4	5
56	9.53266	36	9.55949	39	0.44051	9.97317	5	4
		35		40			5	
57	9.53301		9.55989		0.44011	9.97312		3
58	9.53336	35	9.56028	39	0.43972	9.97308	4	2
59	9.53370	34	9.56067	39	0.43933	9.97303	5	1
60	9.53405	35	9.56107	40	0.43893	9.97299	4	0
	Cos. 70		Cot. 70		Tang. 70	Sin. 70		

'	Sin. 20	Dif.	Tang. 20	D. c.	Cot. 20	Cos. 20	Dif.	'
0	9.53405	35	9.56107		0.43893	9.97299	5	60
1	9.53440	35	9.56146	39	0.43854	9.97294	5	59
2	9.53475	34	9.56185	39	0.43815	9.97289	4	58
3	9.53509	35	9.56224	39	0.43776	9.97285	5	57
4	9.53544	34	9.56264	40	0.43736	9.97280	4	56
5	9.53578	35	9.56303	39	0.43697	9.97276	5	55
6	9.53613	34	9.56342	39	0.43658	9.97271	5	54
7	9.53647	35	9.56381	39	0.43619	9.97266	4	53
8	9.53682	34	9.56420	39	0.43580	9.97262	5	52
9	9.53716	35	9.56459	39	0.43541	9.97257	5	51
10	9.53751	34	9.56498	39	0.43502	9.97252	4	50
11	9.53785	34	9.56537	39	0.43463	9.97248	5	49
12	9.53819	35	9.56576	39	0.43424	9.97243	5	48
13	9.53854	34	9.56615	39	0.43385	9.97238	4	47
14	9.53888	34	9.56654	39	0.43346	9.97234	5	46
15	9.53922	35	9.56693	39	0.43307	9.97229	5	45
16	9.53957	34	9.56732	39	0.43268	9.97224	4	44
17	9.53991	34	9.56771	39	0.43229	9.97220	5	43
18	9.54025	34	9.56810	39	0.43190	9.97215	5	42
19	9.54059	34	9.56849	38	0.43151	9.97210	4	41
20	9.54093	34	9.56887	39	0.43115	9.97206	5	40
21	9.54127	34	9.56926	39	0.43074	9.97201	5	39
22	9.54161	34	9.56965	39	0.43035	9.97196	4	38
23	9.54195	34	9.57004	38	0.42996	9.97192	5	37
24	9.54229	34	9.57042	39	0.42958	9.97187	5	36
25	9.54263	34	9.57081	39	0.42919	9.97182	4	35
26	9.54297	34	9.57120	38	0.42880	9.97178	5	34
27	9.54331	34	9.57158	39	0.42842	9.97173	5	33
28	9.54365	34	9.57197	38	0.42803	9.97168	5	32
29	9.54399	34	9.57235	39	0.42765	9.97163	4	31
30	9.54433		9.57274		0.42726	9.97159		30
	Cos. 69		Cot. 69		Tang. 69	Sin. 69		



'	Sin. 20	Dif.	Tang. 20	D.c.	Cot. 20	Cos. 20	Dif.	'
30	9.54433	33	9.57274	38	0.42726	9.97159	5	30
31	9.54466	34	9.57312	39	0.42688	9.97154	5	29
32	9.54500	34	9.57351	38	0.42649	9.97149	4	28
33	9.54534	33	9.57389	39	0.42611	9.97145	5	27
34	9.54567	34	9.57428	38	0.42572	9.97140	5	26
35	9.54601	34	9.57466	38	0.42534	9.97135	5	25
36	9.54635	33	9.57504	39	0.42496	9.97130	4	24
37	9.54668	34	9.57543	38	0.42457	9.97126	5	23
38	9.54702	33	9.57581	38	0.42419	9.97121	5	22
39	9.54735	34	9.57619	39	0.42381	9.97116	5	21
40	9.54769	33	9.57658	38	0.42342	9.97111	5	20
41	9.54802	34	9.57696	38	0.42304	9.97107	4	19
42	9.54836	33	9.57734	38	0.42266	9.97102	5	18
43	9.54869	34	9.57772	38	0.42228	9.97097	5	17
44	9.54903	33	9.57810	39	0.42190	9.97092	5	16
45	9.54936	33	9.57849	38	0.42151	9.97087	4	15
46	9.54969	34	9.57887	38	0.42113	9.97083	5	14
47	9.55003	33	9.57925	38	0.42075	9.97078	5	13
48	9.55036	33	9.57963	38	0.42037	9.97073	5	12
49	9.55069	33	9.58001	38	0.41999	9.97068	5	11
50	9.55102	34	9.58039	38	0.41961	9.97063	4	10
51	9.55136	33	9.58077	38	0.41923	9.97059	5	9
52	9.55169	33	9.58115	38	0.41885	9.97054	5	8
53	9.55202	33	9.58153	38	0.41847	9.97049	5	7
54	9.55235	33	9.58191	38	0.41809	9.97044	5	6
55	9.55268	33	9.58229	38	0.41771	9.97039	5	5
56	9.55301	33	9.58267	37	0.41733	9.97035	4	4
57	9.55334	33	9.58304	38	0.41696	9.97030	5	3
58	9.55367	33	9.58342	38	0.41658	9.97025	5	2
59	9.55400	33	9.58380	38	0.41620	9.97020	5	1
60	9.55433	33	9.58418	38	0.41582	9.97015	5	0
	Cos. 69		Cot. 69		Tang. 69	Sin. 69		

'	Sin. 21	Dif.	Tang 21	D.c.	Cot. 21	Cos. 21	Dif.	'
0	9.55435	33	9.58418	37	0.41582	9.97015	5	60
1	9.55466	33	9.58455	38	0.41545	9.97010	5	59
2	9.55499	33	9.58493	38	0.41507	9.97005	4	58
3	9.55532	32	9.58531	38	0.41469	9.97001	5	57
4	9.55564	33	9.58569	37	0.41431	9.96996	5	56
5	9.55597	33	9.58606	38	0.41394	9.96991	5	55
6	9.55630	33	9.58644	37	0.41356	9.96986	5	54
7	9.55663	32	9.58681	38	0.41319	9.96981	5	53
8	9.55695	33	9.58719	38	0.41281	9.96976	5	52
9	9.55728	33	9.58757	37	0.41243	9.96971	5	51
10	9.55761	32	9.58794	38	0.41206	9.96966	5	50
11	9.55793	33	9.58832	37	0.41168	9.96962	4	49
12	9.55826	32	9.58869	38	0.41131	9.96957	5	48
13	9.55858	33	9.58907	37	0.41093	9.96952	5	47
14	9.55891	32	9.58944	37	0.41056	9.96947	5	46
15	9.55923	33	9.58981	38	0.41019	9.96942	5	45
16	9.55956	32	9.59019	37	0.40981	9.96947	5	44
17	9.55988	33	9.59056	38	0.40944	9.96932	5	43
18	9.56021	32	9.59094	37	0.40906	9.96927	5	42
19	9.56053	32	9.59131	37	0.40869	9.96922	5	41
20	9.56085	33	9.59168	37	0.40832	9.96917	5	40
21	9.56118	32	9.59206	38	0.40795	9.96912	5	39
22	9.56150	32	9.59243	37	0.40757	9.96907	5	38
23	9.56182	33	9.59280	37	0.40720	9.96903	4	37
24	9.56215	32	9.59317	37	0.40683	9.96898	5	36
25	9.56247	32	9.59354	37	0.40646	9.96893	5	35
26	9.56279	32	9.59391	38	0.40609	9.96888	5	34
27	9.56311	32	9.59429	37	0.40571	9.96883	5	33
28	9.56343	32	9.59466	37	0.40534	9.96878	5	32
29	9.56375	33	9.59503	37	0.40497	9.96873	5	31
30	9.56408	33	9.59540	37	0.40460	9.96868	5	30
	Cos. 68		Cot. 68		Tang. 68	Sin. 68		

'	Sin. 21	Dif	Tang. 21	D. c.	Cot. 21	Cos. 21	Dif.	'
30	9.56408	32	9.59540	37	0.40460	9.96868	5	30
31	9.56440	32	9.59577	37	0.40423	9.96863	5	29
32	9.56472	32	9.59614	37	0.40386	9.96858	5	28
		32		37			5	
33	9.56504	32	9.59651	37	0.40349	9.96853	5	27
34	9.56536	32	9.59688	37	0.40312	9.96848	5	26
35	9.56568	31	9.59725	37	0.40275	9.96843	5	25
		32		37			5	
36	9.56599	32	9.59762	37	0.40238	9.96838	5	24
37	9.56631	32	9.59799	36	0.40201	9.96833	5	23
38	9.56663	32	9.59835	37	0.40165	9.96828	5	22
		32		37			5	
39	9.56695	32	9.59872	37	0.40128	9.96823	5	21
40	9.56727	32	9.59909	37	0.40091	9.96818	5	20
41	9.56759	31	9.59946	37	0.40054	9.96813	5	19
		32		37			5	
42	9.56790	32	9.59983	36	0.40017	9.96808	5	18
43	9.56822	32	9.60019	37	0.39981	9.96803	5	17
44	9.56854	32	9.60056	37	0.39944	9.96798	5	16
		32		37			5	
45	9.56886	31	9.60093	37	0.39907	9.96793	5	15
46	9.56917	32	9.60130	36	0.39870	9.96788	5	14
47	9.56949	31	9.60166	37	0.39834	9.96783	5	13
		32		37			5	
48	9.56980	32	9.60203	37	0.39797	9.96778	6	12
49	9.57012	32	9.60240	36	0.39760	9.96772	5	11
50	9.57044	31	9.60276	37	0.39724	9.96767	5	10
		32		36			5	
51	9.57075	32	9.60313	36	0.39687	9.96762	5	9
52	9.57107	31	9.60349	37	0.39651	9.96757	5	8
53	9.57138	31	9.60386	36	0.39614	9.96752	5	7
		32		36			5	
54	9.57169	32	9.60422	37	0.39578	9.96747	5	6
55	9.57201	31	9.60459	36	0.39541	9.96742	5	5
56	9.57232	32	9.60495	37	0.39505	9.96737	5	4
		32		37			5	
57	9.57264	31	9.60532	36	0.39468	9.96732	5	3
58	9.57295	31	9.60568	37	0.39432	9.96727	5	2
59	9.57326	31	9.60605	36	0.39395	9.96722	5	1
60	9.57358	32	9.60641	36	0.39359	9.96717	5	0
	Cos. 68		Cot. 68		Tang. 68	Sin. 68		



'	Sin. 22	Dif.	Tang. 22	D.c.	Cot. 22	Cos. 22	Dif.	'
0	9.57358		9.60641		0.39359	9.96717		60
1	9.57389	31	9.60677	36	0.39323	9.96711	6	59
2	9.57420	31	9.60714	37	0.39286	9.96706	5	58
		31		36			5	
3	9.57451	31	9.60750	36	0.39250	9.96701	5	57
4	9.57482	31	9.60786	36	0.39214	9.96696	5	56
5	9.57514	32	9.60823	37	0.39177	9.96691	5	55
		31		36			5	
6	9.57545	31	9.60859	36	0.39141	9.96686	5	54
7	9.57576	31	9.60895	36	0.39105	9.96681	5	53
8	9.57607	31	9.60931	36	0.39069	9.96676	5	52
		31		36			6	
9	9.57638	31	9.60967	37	0.39033	9.96670	5	51
10	9.57669	31	9.61004	36	0.38996	9.96665	5	50
11	9.57700	31	9.61040	36	0.38960	9.96660	5	49
		31		36			5	
12	9.57731	31	9.61076	36	0.38924	9.96655	5	48
13	9.57762	31	9.61112	36	0.38888	9.96650	5	47
14	9.57793	31	9.61148	36	0.38852	9.96655	5	46
		31		36			5	
15	9.57824	31	9.61184	36	0.38816	9.96640	6	45
16	9.57855	30	9.61220	36	0.38780	9.96634	6	44
17	9.57885	31	9.61256	36	0.38744	9.96629	5	43
		31		36			5	
18	9.57916	31	9.61292	36	0.38708	9.96624	5	42
19	9.57947	31	9.61328	36	0.38672	9.96619	5	41
20	9.57978	30	9.61364	36	0.38636	9.96614	5	40
		30		36			6	
21	9.58008	31	9.61400	36	0.38600	9.96608	5	39
22	9.58039	31	9.61436	36	0.38564	9.96603	5	38
23	9.58070	31	9.61472	36	0.38528	9.96598	5	37
		31		36			5	
24	9.58101	30	9.61508	36	0.38492	9.96593	5	36
25	9.58131	31	9.61544	35	0.38456	9.96588	5	35
26	9.58162	30	9.61579	35	0.38421	9.96582	6	34
		30		36			5	
27	9.58192	31	9.61615	36	0.38385	9.96577	5	33
28	9.58223	30	9.61651	36	0.38349	9.96572	5	32
29	9.58253	31	9.61687	35	0.38313	9.96567	5	31
30	9.58284	31	9.61722	35	0.38278	9.96562	5	30
	Cos. 67		Cot. 67		Tang. 67	Sin. 67		

'	Sin. 22	Dif.	Tang. 22	D.c.	Cot. 22	Cos. 22	Dif.	'
30	9.58284	30	9.61722	36	0.38278	9.96562	6	30
31	9.58314	31	9.61758	36	0.38242	9.96556	5	29
32	9.58345	30	9.61794	36	0.38206	9.96551	5	28
33	9.58376	31	9.61830	36	0.38170	9.96546	5	27
34	9.58406	30	9.61865	36	0.38135	9.96541	6	26
35	9.58436	31	9.61901	35	0.38099	9.96535	5	25
36	9.58467	30	9.61936	36	0.38064	9.96530	5	24
37	9.58497	30	9.61972	36	0.38028	9.96525	5	23
38	9.58527	30	9.62008	35	0.37992	9.96520	6	22
39	9.58557	31	9.62043	36	0.37957	9.96514	5	21
40	9.58588	30	9.62079	35	0.37921	9.96509	5	20
41	9.58618	30	9.62114	36	0.37886	9.96504	6	19
42	9.58648	30	9.62150	35	0.37850	9.96498	5	18
43	9.58678	31	9.62185	36	0.37815	9.96493	5	17
44	9.58709	30	9.62221	35	0.37779	9.96488	6	16
45	9.58739	30	9.62256	36	0.37744	9.96483	6	15
46	9.58769	30	9.62292	35	0.37708	9.96477	5	14
47	9.58799	30	9.62327	35	0.37673	9.96472	5	13
48	9.58829	30	9.62362	36	0.37638	9.96467	6	12
49	9.58859	30	9.62398	35	0.37602	9.96461	5	11
50	9.58889	30	9.62433	35	0.37567	9.96456	5	10
51	9.58919	30	9.62468	36	0.37532	9.96451	6	9
52	9.58949	30	9.62504	35	0.37496	9.96445	5	8
53	9.58979	30	9.62539	35	0.37461	9.96440	5	7
54	9.59009	30	9.62574	35	0.37426	9.96435	6	6
55	9.59039	30	9.62609	36	0.37391	9.96429	5	5
56	9.59069	29	9.62645	35	0.37355	9.96424	5	4
57	6.59098	30	9.62680	35	0.37320	9.96419	5	3
58	9.59128	30	9.62715	35	0.37285	9.96413	6	2
59	9.59158	30	9.62750	35	0.37250	9.96408	5	1
60	9.59188	30	9.62785	35	0.37215	9.96403	5	0
	Cos. 67		Cot. 67		Tang. 67	Sin. 67		

'	Sin. 23	Dif.	Tang. 23	D. c.	Cot. 23	Cos. 23	Dif.	'
0	9.59188		9.62785		0.37215	9.96405		60
1	9.59218	30	9.62820	35	0.37180	9.96397	6	59
2	9.59247	29	9.62855	35	0.37145	9.96392	5	58
		30		35			5	
3	9.59277	30	9.62890		0.37110	9.96387		57
4	9.59307	30	9.62926	36	0.37074	9.96381	6	56
5	9.59336	29	9.62961	35	0.37039	9.96376	5	55
		30		35			6	
6	9.59366	30	9.62996		0.37004	9.96370		54
7	9.59396	30	9.63031	35	0.36969	9.96365	5	53
8	9.59425	29	9.63066	35	0.36934	9.96360	5	52
		30		35			6	
9	9.59455		9.63101		0.36899	9.96354		51
10	9.59484	29	9.63135	34	0.36865	9.96349	5	50
11	9.59514	30	9.63170	35	0.36830	9.96343	6	49
		29		35			5	
12	9.59543	30	9.63205		0.36795	9.96338		48
13	9.59573	30	9.63240	35	0.36760	9.96333	5	47
14	9.59602	29	9.63275	35	0.36725	9.96327	6	46
		30		35			5	
15	9.59632		9.63310		0.36690	9.96322		45
16	9.59661	29	9.63345	35	0.36655	9.96316	6	44
17	9.59690	29	9.63379	34	0.36621	9.96311	5	43
		30		35			6	
18	9.59720		9.63414		0.36586	9.96305		42
19	9.59749	29	9.63449	35	0.36551	9.96300	5	41
20	9.59778	29	9.63484	35	0.36516	9.96294	6	40
		30		35			5	
21	9.59808		9.63519		0.36481	9.96289		39
22	9.59837	29	9.63553	34	0.36447	9.96284	5	38
23	9.59866	29	9.63588	35	0.36412	9.96278	6	37
		29		35			5	
24	9.59895		9.63623		0.36377	9.96273		36
25	9.59924	29	9.63657	34	0.36343	9.96267	6	35
26	9.59954	30	9.63692	35	0.36308	9.96262	5	34
		29		34			6	
27	9.60083		9.63726		0.36274	9.96256		33
28	9.60112	29	9.63761	35	0.36239	9.96251	5	32
29	9.60141	29	9.63796	35	0.36204	9.96245	6	31
30	9.60170	29	9.63830	34	0.36170	9.96240	5	30
	Cos. 66		Cot. 66		Tang. 66	Sin. 66		



'	Sin. 23	Dif.	Tang. 23	D. c.	Cot. 23	Cos. 23	Dif.	'
30	9.60070		9.63830		0.36170	9.96240		30
31	9.60099	29	9.63865	35	0.36135	9.96234	6	29
32	9.60128	29	9.63899	34	0.36101	9.96229	5	28
		29		35			6	
33	9.60157	29	9.63934	34	0.36066	9.96223	5	27
34	9.60186	29	9.63968	35	0.36032	9.96218	6	26
35	9.60215	29	9.64003	34	0.35997	9.96212	5	25
		29		35			6	
36	9.60244	29	9.64037	34	0.35965	9.96207	5	24
37	9.60273	29	9.64072	35	0.35928	9.96201	6	23
38	9.60302	29	9.64106	34	0.35894	9.96196	5	22
		29		35			6	
39	9.60331	28	9.64140	34	0.35860	9.96190	5	21
40	9.60359	29	9.64175	35	0.35825	9.96185	6	20
41	9.60388	29	9.64209	34	0.35791	9.96179	5	19
		29		35			6	
42	9.60417	29	9.64243	34	0.35757	9.96174	5	18
43	9.60446	28	9.64278	35	0.35722	9.96168	6	17
44	9.60474	29	9.64312	34	0.35688	9.96162	5	16
		29		35			6	
45	9.60503	29	9.64346	34	0.35654	9.96157	5	15
46	9.60532	29	9.64381	35	0.35619	9.96151	6	14
47	9.60561	29	9.64415	34	0.35585	9.96146	5	13
		28		35			6	
48	9.50589	29	9.64449	34	0.35551	9.96140	5	12
49	9.50618	28	9.64483	35	0.35517	9.96135	6	11
50	9.50646	29	9.64517	34	0.35483	9.96129	5	10
		29		35			6	
51	9.60675	29	9.64552	34	0.35448	9.96123	5	9
52	9.60704	28	9.64586	35	0.35414	9.96118	6	8
53	9.60732	29	9.64620	34	0.35380	9.96112	5	7
		29		35			6	
54	9.60761	28	9.64654	34	0.35346	9.96107	5	6
55	9.60789	29	9.64688	35	0.35312	9.96101	6	5
56	9.60818	29	9.64722	34	0.35278	9.96095	5	4
		28		35			6	
57	9.60846	29	9.64756	34	0.35244	9.96090	5	3
58	9.60875	28	9.64790	35	0.35210	9.96084	6	2
59	9.60903	28	9.64824	34	0.35176	9.96079	5	1
60	9.60931	28	9.64858	35	0.35142	9.96073	6	0
	Cos. 66		Cot. 66		Tang. 66	Sin. 66		

'	Sin. 24	Dif.	Tang. 24	D.c.	Cot. 24	Cos. 24	Dif.	'
0	9.60931	29	9.64858	34	0.35142	9.96073	6	60
1	9.60960	28	9.64892	34	0.35108	9.96067	5	59
2	9.60988	28	9.64926	34	0.35074	9.96062	6	58
3	9.61016	29	9.64960	34	0.35040	9.96056	6	57
4	9.61045	28	9.64994	34	0.35006	9.96050	5	56
5	9.61073	28	9.65028	34	0.34972	9.96045	6	55
6	9.61101	28	9.65062	34	0.34938	9.96039	5	54
7	9.61129	29	9.65096	34	0.34904	9.96034	6	53
8	9.61158	28	9.65130	34	0.34870	9.96028	6	52
9	9.61186	28	9.65164	33	0.34836	9.96022	5	51
10	9.61214	28	9.65197	34	0.34803	9.96017	6	50
11	9.61242	28	9.65231	34	0.34769	9.96011	6	49
12	9.61270	28	9.65265	34	0.34735	9.96005	5	48
13	9.61298	28	9.65299	34	0.34701	9.96000	6	47
14	9.61326	28	9.65333	33	0.34667	9.95994	6	46
15	9.61354	28	9.65366	34	0.34634	9.95988	6	45
16	9.61382	29	9.65400	34	0.34600	9.95982	5	44
17	9.61411	27	9.65434	33	0.34566	9.95977	6	43
18	9.61438	28	9.65467	34	0.34533	9.95971	6	42
19	9.61466	28	9.65501	34	0.34499	9.95965	5	41
20	9.61494	28	9.65535	33	0.34465	9.95960	6	40
21	9.61522	28	9.65568	34	0.34432	9.95954	6	39
22	9.61550	28	9.65602	34	0.34398	9.95948	6	38
23	9.61578	28	9.65636	33	0.34364	9.95942	5	37
24	9.61606	28	9.65669	34	0.34331	9.95937	6	36
25	9.61634	28	9.65703	33	0.34297	9.95931	6	35
26	9.61662	27	9.65736	34	0.34264	9.95925	5	34
27	9.61689	28	9.65770	33	0.34230	9.95920	6	33
28	9.61717	28	9.65803	34	0.34197	9.95914	6	32
29	9.61745	28	9.65837	33	0.34163	9.95908	6	31
30	9.61773	28	9.65870	33	0.34130	9.95902	6	30
	Cos. 65		Cot. 65		Tang. 65	Sin. 65		

'	Sin. 24	Dif.	Tang. 24	D.c.	Cot. 24	Cos. 24	Dif.	'
30	9.61773		9.65870		0.34130	9.95902		30
31	9.61800	27	9.65904	34	0.34096	9.95897	5	29
32	9.61828	28	9.65937	33	0.34063	9.95891	6	28
		28		34			6	
33	9.61856		9.66071		0.34029	9.95885		27
34	9.61883	27	9.66004	33	0.33996	9.95879	6	26
35	9.61911	28	9.66038	34	0.33962	9.95873	6	25
		28		33			5	
36	9.61939		9.66071		0.33929	9.95868		24
37	9.61966	27	9.66104	33	0.33896	9.95862	6	23
38	9.61994	28	9.66138	34	0.33862	9.95856	6	22
		27		33			6	
39	9.62021		9.66171		0.33829	9.95850		21
40	9.62049	28	9.66204	33	0.33796	9.95844	6	20
41	9.62076	27	9.66238	34	0.33762	9.95839	5	19
		28		33			6	
42	9.62104		9.66271		0.33729	9.95833		18
43	9.62131	27	9.66304	33	0.33696	9.95827	6	17
44	9.62159	28	9.66337	33	0.33663	9.95821	6	16
		27		34			6	
45	9.62186		9.66371		0.33629	9.95815		15
46	9.62214	28	9.66404	33	0.33596	9.95810	5	14
47	9.62241	27	9.66437	33	0.33563	9.95804	6	13
		27		33			6	
48	9.62268		9.66470		0.33530	9.95798		12
49	9.62296	28	9.66503	33	0.33497	9.95792	6	11
50	9.62323	27	9.66537	34	0.33463	9.95786	6	10
		27		33			6	
51	9.62350		9.66570		0.33430	9.95780		9
52	9.62377	27	9.66603	33	0.33397	9.95775	5	8
53	9.62405	28	9.66636	33	0.33364	9.95769	6	7
		27		33			6	
54	9.62432		9.66669		0.33331	9.95763		6
55	9.62459	27	9.66702	33	0.33298	9.95757	6	5
56	9.62486	27	9.66735	33	0.33265	9.95751	6	4
		27		33			6	
57	9.62513		9.66768		0.33232	9.95745		3
58	9.62541	28	9.66801	33	0.33199	9.95739	6	2
59	9.62568	27	9.66834	33	0.33166	9.95733	6	1
60	9.62595	27	9.66867	33	0.33133	9.95728	5	0
	Cos. 65		Cot. 65		Tang. 65	Sin. 65		



'	Sin. 25	Dif.	Tang. 25	D.c.	Cot. 25	Cos. 25	Dif.	'
0	9.62595		9.66867	33	0.33133	9.95728		60
1	9.62622	27	9.66900	33	0.33100	9.95722	6	59
2	9.62649	27	9.66933	33	0.33067	9.95716	6	58
		27		33			6	
3	9.62676	27	9.66966	33	0.33034	9.95710	6	57
4	9.62703	27	9.66999	33	0.33001	9.95704	6	56
5	9.62730	27	9.67032	33	0.32968	9.95698	6	55
		27		33			6	
6	9.62757	27	9.67065	33	0.32935	9.95692	6	54
7	9.62784	27	9.67098	33	0.32902	9.95686	6	55
8	9.62811	27	9.67131	32	0.32869	9.95680	6	52
		27		32			6	
9	9.62838	27	9.67163	33	0.32837	9.95674	6	51
10	9.62865	27	9.67196	33	0.32804	9.95668	6	50
11	9.62892	27	9.67229	33	0.32771	9.95663	5	49
		26		33			6	
12	9.62918	27	9.67262	55	0.32738	9.95657	6	48
13	9.62945	27	9.67295	32	0.32705	9.95651	6	47
14	9.62972	27	9.67327	33	0.32673	9.95645	6	46
		27		33			6	
15	9.62999	27	9.67360	33	0.32640	9.95639	6	45
16	9.63026	26	9.67393	33	0.32607	9.95633	6	44
17	9.63052	26	9.67426	33	0.32574	9.95627	6	43
		27		32			6	
18	9.63079	27	9.67458	33	0.32542	9.95621	6	42
19	9.63106	27	9.67491	33	0.32509	9.95615	6	41
20	9.63133	27	9.67524	32	0.32476	9.95609	6	40
		26		32			6	
21	9.63159	27	9.67556	33	0.32444	9.95603	6	39
22	9.63186	27	9.67589	33	0.32411	9.95597	6	38
23	9.63213	26	9.67622	32	0.32378	9.95591	6	37
		26		32			6	
24	9.63239	27	9.67654	33	0.32346	9.95585	6	36
25	9.63266	26	9.67687	32	0.32313	9.95579	6	35
26	9.63292	27	9.67719	33	0.32281	9.95573	6	34
		27		33			6	
27	9.63319	26	9.67752	33	0.32248	9.95567	6	33
28	9.63345	27	9.67785	32	0.32215	9.95561	6	32
29	9.63372	26	9.67817	33	0.32183	9.95555	6	31
30	9.63398	26	9.67850	33	0.32150	9.95549	6	30
							6	
	Cos. 64		Cot. 64		Tang. 64	Sin. 64		

'	Sin. 25	Dif.	Tang. 25	D.c.	Cot. 25	Cos. 25	Dif.	'
30	9.63398		9.67850		0.32150	9.95549		30
31	9.63425	27	9.67882	32	0.32118	9.95545	6	29
32	9.63451	26	9.67915	33	0.32085	9.95537	6	28
		27		32			6	
33	9.63478	26	9.67947	33	0.32053	9.95531	6	27
34	9.63504	26	9.67980	32	0.32020	9.95525	6	26
35	9.63531	27	9.68012	32	0.31988	9.95519	6	25
		26		32			6	
36	9.63557	26	9.68044	33	0.31956	9.95513	6	24
37	9.63583	26	9.68077	32	0.31923	9.95507	6	23
38	9.63610	27	9.68109	32	0.31891	9.95500	7	22
		26		33			6	
39	9.63636	26	9.68142	32	0.31858	9.95494	6	21
40	9.63662	26	9.68174	32	0.31826	9.95488	6	20
41	9.63689	27	9.68206	32	0.31794	9.95482	6	19
		26		33			6	
42	9.63715	26	9.68239	32	0.31761	9.95476	6	18
43	9.63741	26	9.68271	32	0.31729	9.95470	6	17
44	9.63767	26	9.68303	32	0.31697	9.95464	6	16
		27		33			6	
45	9.63794	26	9.68336	32	0.31664	9.95458	6	15
46	9.63820	26	9.68368	32	0.31632	9.95452	6	14
47	9.63846	26	9.68400	32	0.31600	9.95446	6	13
		26		32			6	
48	9.63872	26	9.68432	33	0.31568	9.95440	6	12
49	9.63898	26	9.68465	32	0.31536	9.95434	6	11
50	9.63924	26	9.68497	32	0.31503	9.95427	7	10
		26		32			6	
51	9.63950	26	9.68529	32	0.31471	9.95421	6	9
52	9.63976	26	9.68561	32	0.31439	9.95415	6	8
53	9.64002	26	9.68593	32	0.31407	9.95409	6	7
		26		33			6	
54	9.64028	26	9.68626	32	0.31374	9.95403	6	6
55	9.64054	26	9.68658	32	0.31342	9.95397	6	5
56	9.64080	26	9.68690	32	0.31310	9.95391	6	4
		26		32			7	
57	6.64106	26	9.68722	32	0.31278	9.95384	6	3
58	9.64132	26	9.68754	32	0.31246	9.95378	6	2
59	9.64158	26	9.68786	32	0.31214	9.95372	6	1
60	9.64184	26	9.68818	32	0.31182	9.95366	6	0
	Cos. 64		Cot. 64		Tang. 64	Sin. 64		

	Sin. 26	Dif.	Fang. 26	D. c.	Cot. 26	Cos. 26	Dif.	
0	9.64184	26	9.68818	32	0.31182	9.95366	6	60
1	9.64210	26	9.68850	32	0.31150	9.95360	6	59
2	9.64236	26	9.68882	32	0.31118	9.95354	6	58
3	9.64262	26	9.68914	32	0.31086	9.95348	6	57
4	9.64288	26	9.68946	32	0.31054	9.95341	7	56
5	9.64313	25	9.68978	32	0.31022	9.95335	6	55
6	9.64339	26	9.69010	32	0.30990	9.95329	6	54
7	9.64365	26	9.69042	32	0.30958	9.95323	6	53
8	9.64391	26	9.69074	32	0.30926	9.95317	6	52
9	9.64417	25	9.69106	32	0.30894	9.95310	7	51
10	9.64442	26	9.69138	32	0.30862	9.95304	6	50
11	9.64468	26	9.69170	32	0.30830	9.95298	6	49
12	9.64494	25	9.69202	32	0.30798	9.95292	6	48
13	9.64519	26	9.69234	32	0.30766	9.95286	6	47
14	9.64545	26	9.69266	32	0.30734	9.95279	7	46
15	9.64571	25	9.69298	32	0.30702	9.95273	6	45
16	9.64596	26	9.69329	32	0.30671	9.95267	6	44
17	9.64622	25	9.69361	32	0.30639	9.95261	6	43
18	9.64647	26	9.69393	32	0.30607	9.95254	7	42
19	9.64673	25	9.69425	32	0.30575	9.95248	6	41
20	9.64698	26	9.69457	32	0.30543	9.95242	6	40
21	9.64724	25	9.69488	32	0.30512	9.95236	6	39
22	9.64749	26	9.69520	32	0.30480	9.95229	7	38
23	9.64775	25	9.69552	32	0.30448	9.95223	6	37
24	9.64800	26	9.69584	32	0.30416	9.95217	6	36
25	9.64826	25	9.69615	31	0.30385	9.95211	6	35
26	9.64851	26	9.69647	32	0.30353	9.95204	7	34
27	9.64877	25	9.69679	32	0.30321	9.95198	6	33
28	9.64902	25	9.69710	31	0.30290	9.95192	6	32
29	9.64927	26	9.69742	32	0.30258	9.95185	7	31
30	9.64953	26	9.69774	32	0.30226	9.95179	6	30
	Cos. 63		Cot. 63		Fang. 63	Sin. 63		



'	Sin. 26	Dif.	Tang. 26	D. c.	Cot. 26	Cos. 26	Dif.	'
30	9.64953	25	9.69774	31	0.30226	9.95179	6	30
31	9.64978	25	9.69805	32	0.30195	9.95173	6	29
32	9.65003	26	9.69837	31	0.30163	9.95167	7	28
33	9.65029	25	9.69868	32	0.30132	9.95160	6	27
34	9.65054	25	9.69900	32	0.30100	9.95154	6	26
35	9.65079	25	9.69932	31	0.30068	9.95148	7	25
36	9.65104	26	9.69963	32	0.30037	9.95141	6	24
37	9.65130	25	9.69995	31	0.30005	9.95135	6	23
38	9.65155	25	9.70026	32	0.29974	9.95129	7	22
39	9.65180	25	9.70058	31	0.29942	9.95123	6	21
40	9.65205	25	9.70089	32	0.29911	9.95116	6	20
41	9.65230	25	9.70121	31	0.29879	9.95110	7	19
42	9.65255	26	9.70152	32	0.29848	9.95105	6	18
43	9.65281	25	9.70184	31	0.29816	9.95097	7	17
44	9.65306	25	9.70215	32	0.29785	9.95090	6	16
45	9.65331	25	9.70247	31	0.29753	9.95084	6	15
46	9.65356	25	9.70278	31	0.29722	9.95078	7	14
47	9.65381	25	9.70309	32	0.29691	9.95071	6	13
48	9.65406	25	9.70341	31	0.29659	9.95065	6	12
49	9.65431	25	9.70372	32	0.29628	9.95059	7	11
50	9.65456	25	9.70404	31	0.29596	9.95052	6	10
51	9.65481	25	9.70435	31	0.29565	9.95046	7	9
52	9.65506	25	9.70466	32	0.29534	9.95039	6	8
53	9.65531	25	9.70498	31	0.29502	9.95033	6	7
54	9.65556	24	9.70529	31	0.29471	9.95027	7	6
55	9.65580	25	9.70560	32	0.29440	9.95020	6	5
56	9.65605	25	9.70592	31	0.29408	9.95014	7	4
57	9.65630	25	9.70623	31	0.29377	9.95007	6	3
58	9.65655	25	9.70654	31	0.29346	9.95001	6	2
59	9.65680	25	9.70685	32	0.29315	9.94995	7	1
60	9.65705		9.70717		0.29283	9.94988		0
	Cos. 63		Cot. 63		Tang. 63	Sin. 63		

'	Sin. 27	Dif.	Tang. 27	D.c.	Cot. 27	Cos. 27	Dif	'
0	9.65705	24	9.70717	31	0.29283	9.94988	6	60
1	9.65729	25	9.70748	31	0.29252	9.94982	7	59
2	9.65754	25	9.70779	31	0.29221	9.94975	6	58
3	9.65779	25	9.70810	31	0.29190	9.94969	7	57
4	9.65804	24	9.70841	32	0.29159	9.94962	6	56
5	9.65828	25	9.70873	31	0.29127	9.94956	7	55
6	9.65853	25	9.70904	31	0.29096	9.94949	6	54
7	9.65878	24	9.70935	31	0.29065	9.94943	7	53
8	9.65902	25	9.70966	31	0.29034	9.94936	6	52
9	9.65927	25	9.70997	31	0.29003	9.94930	7	51
10	9.65952	24	9.71028	31	0.28972	9.94923	6	50
11	9.65976	25	9.71059	31	0.28941	9.94917	6	49
12	9.66001	24	9.71090	31	0.28910	9.94911	7	48
13	9.66025	25	9.71121	32	0.28879	9.94904	6	47
14	9.66050	25	9.71153	31	0.28847	9.94898	7	46
15	9.66075	24	9.71184	31	0.28816	9.94891	6	45
16	9.66099	25	9.71215	31	0.28785	9.94885	7	44
17	9.66124	24	9.71246	31	0.28754	9.94878	7	43
18	9.66148	25	9.71277	31	0.28723	9.94871	6	42
19	9.66173	24	9.71308	31	0.28692	9.94865	7	41
20	9.66197	24	9.71339	31	0.28661	9.94858	6	40
21	9.66221	25	9.71370	31	0.28630	9.94852	7	39
22	9.66246	24	9.71401	30	0.28599	9.94845	6	38
23	9.66270	25	9.71431	31	0.28569	9.94839	7	37
24	9.66295	24	9.71462	31	0.28538	9.94832	6	36
25	9.66319	24	9.71493	31	0.28507	9.94826	7	35
26	9.66343	25	9.71524	31	0.28476	9.94819	6	34
27	9.66368	24	9.71555	31	0.28445	9.94813	7	33
28	9.66392	24	9.71586	31	0.28414	9.94806	7	32
29	9.66416	25	9.71617	31	0.28383	9.94799	6	31
30	9.66441	25	9.71648	31	0.28352	9.94793	6	30
	Cos. 62		Cot. 62		Tang. 62	Sin. 62		

'	Sin. 27	Dif.	Tang. 27	D. c.	Cot. 27	Cos. 27	Dif.	'
30	9.66441		9.71648		0.28352	9.94793		30
31	9.66465	24	9.71679	31	0.28321	9.94786	7	29
32	9.66489	24	9.71709	30	0.28291	9.94780	6	28
		24		31			7	
33	9.66513	24	9.71740	31	0.28260	9.94773	6	27
34	9.66537	24	9.71771	31	0.28229	9.94767	7	26
35	9.66562	25	9.71802	31	0.28198	9.94760	7	25
		24		31			7	
36	9.66586	24	9.71833	31	0.28167	9.94753	6	24
37	9.66610	24	9.71863	30	0.28137	9.94747	7	23
38	9.66634	24	9.71894	31	0.28106	9.94740	6	22
		24		31			7	
39	9.66658	24	9.71925	30	0.28075	9.94734	6	21
40	9.66682	24	9.71955	31	0.28045	9.94727	7	20
41	9.66706	25	9.71986	31	0.28014	9.94720	6	19
		24		31			7	
42	9.66731	24	9.72017	31	0.27983	9.94714	6	18
43	9.66755	24	9.72048	30	0.27952	9.94707	7	17
44	9.66779	24	9.72078	31	0.27922	9.94700	6	16
		24		31			7	
45	9.66803	24	9.72109	31	0.27891	9.94694	6	15
46	9.66827	24	9.72140	30	0.27860	9.94687	7	14
47	9.66851	24	9.72170	31	0.27830	9.94680	6	13
		24		31			7	
48	9.66875	24	9.72201	30	0.27799	9.94674	6	12
49	9.66899	25	9.72231	31	0.27769	9.94667	7	11
50	9.66922	24	9.72262	31	0.27738	9.94660	6	10
		24		31			7	
51	9.66946	24	9.72293	30	0.27707	9.94654	6	9
52	9.66970	24	9.72323	31	0.27677	9.94647	7	8
53	9.66994	24	9.72354	30	0.27646	9.94640	6	7
		24		31			7	
54	9.67018	24	9.72384	31	0.27616	9.94634	6	6
55	9.67042	24	9.72415	30	0.27585	9.94627	7	5
56	9.67066	24	9.72445	31	0.27555	9.94620	6	4
		24		31			7	
57	9.67090	23	9.72476	30	0.27524	9.94614	6	3
58	9.67113	24	9.72506	31	0.27494	9.94607	7	2
59	9.67137	24	9.72537	30	0.27463	9.94600	6	1
60	9.67161		9.72567		0.27433	9.94593	7	0
	Cos. 62		Cot. 62		Tang. 62	Sin. 62		



'	Sin. 28	Dif.	Tang. 28	D.c.	Cot. 28	Cos. 28	Dif.	'
0	9.67161		9.72567		0.27433	9.94593		60
1	9.67185	24	9.72598	31	0.27402	9.94587	6	59
2	9.67208	23	9.72628	30	0.27372	9.94580	7	58
		24		31			7	
3	9.67232	24	9.72659	30	0.27341	9.94573	6	57
4	9.67256	24	9.72689	31	0.27311	9.94567	7	56
5	9.67280	24	9.72720	30	0.27280	9.94560	7	55
		23		30			7	
6	9.67303	24	9.72750	30	0.27250	9.94553	7	54
7	9.67327	23	9.72780	31	0.27220	9.94546	6	53
8	9.67350	24	9.72811	30	0.27189	9.94540	7	52
		24		30			7	
9	9.67374	24	9.72841	31	0.27159	9.94533	7	51
10	9.67398	23	9.72872	30	0.27128	9.94526	7	50
11	9.67421	24	9.72902	30	0.27098	9.94519	6	49
		24		30			6	
12	9.67445	23	9.72932	31	0.27068	9.94513	7	48
13	9.67468	24	9.72963	30	0.27037	9.94506	7	47
14	9.67492	23	9.72993	30	0.27007	9.94499	7	46
		23		30			7	
15	9.67515	24	9.73023	31	0.26977	9.94492	7	45
16	9.67539	23	9.73054	30	0.26946	9.94485	6	44
17	9.67562	24	9.73084	30	0.26916	9.94479	7	43
		24		30			7	
18	9.67586	23	9.73114	30	0.26886	9.94472	7	42
19	9.67609	24	9.73144	31	0.26856	9.94465	7	41
20	9.67633	24	9.73175	30	0.26825	9.94458	7	40
		23		30			7	
21	9.67656	24	9.73205	30	0.26795	9.94451	6	39
22	9.67680	23	9.73235	30	0.26765	9.94445	7	38
23	9.67703	23	9.73265	30	0.26735	9.94438	7	37
		23		30			7	
24	9.67726	24	9.73295	31	0.26705	9.94431	7	36
25	9.67750	23	9.73326	30	0.26674	9.94424	7	35
26	9.67773	23	9.73356	30	0.26644	9.94417	7	34
		23		30			7	
27	9.67796	24	9.73386	30	0.26614	9.94410	6	33
28	9.67820	23	9.73416	30	0.26584	9.94404	7	32
29	9.67843	23	9.73446	30	0.26554	9.94397	7	31
30	9.67866	23	9.73476	30	0.26524	9.94390	7	30
	Cos. 61		Cot. 61		Tang. 61	Sin. 61		

	Sin. 28	Dif.	Lang. 28	D. c.	Cot. 28	Cos. 28	Dif.	
30	9.67806		9.73476	31	0.26524	9.94590		30
31	9.67890	24	9.73507	30	0.26493	9.94583	7	29
32	9.67913	23	9.73537	30	0.26463	9.94576	7	28
		25		30			7	
33	9.67936	23	9.73567	30	0.26433	9.94569	7	27
34	9.67959	23	9.73597	30	0.26403	9.94562	7	26
35	9.67982	24	9.73627	30	0.26373	9.94555	7	25
		23		30			6	
36	9.68006	23	9.73657	30	0.26343	9.94549	7	24
37	9.68029	23	9.73687	30	0.26313	9.94542	7	23
38	9.68052	23	9.73717	30	0.26283	9.94535	7	22
		23		30			7	
39	9.68075	23	9.73747	30	0.26253	9.94528	7	21
40	9.68098	23	9.73777	30	0.26223	9.94521	7	20
41	9.68121	23	9.73807	30	0.26193	9.94514	7	19
		23		30			7	
42	9.68144	23	9.73837	30	0.26163	9.94507	7	18
43	9.68167	23	9.73867	30	0.26133	9.94500	7	17
44	9.68190	23	9.73897	30	0.26103	9.94493	7	16
		23		30			7	
45	9.68213	24	9.73927	30	0.26073	9.94486	7	15
46	9.68237	23	9.73957	30	0.26043	9.94479	7	14
47	9.68260	23	9.73987	30	0.26013	9.94472	6	13
		23		30			7	
48	9.68283	22	9.74017	30	0.25983	9.94466	7	12
49	9.68306	23	9.74047	30	0.25953	9.94459	7	11
50	9.68328	23	9.74077	30	0.25923	9.94452	7	10
		23		30			7	
51	9.68351	23	9.74107	30	0.25893	9.94445	7	9
52	9.68374	23	9.74137	29	0.25863	9.94438	7	8
53	9.68397	23	9.74166	30	0.25834	9.94431	7	7
		23		30			7	
54	9.68420	23	9.74196	30	0.25804	9.94424	7	6
55	9.68443	23	9.74226	30	0.25774	9.94417	7	5
56	9.68466	23	9.74256	30	0.25744	9.94410	7	4
		23		30			7	
57	9.68489	23	9.74286	30	0.25714	9.94403	7	3
58	9.68512	22	9.74316	29	0.25684	9.94396	7	2
59	9.68534	23	9.74345	30	0.25655	9.94389	7	1
60	9.68557	23	9.74375	30	0.25625	9.94382	7	0
	Cos. 61		Cot. 61		Lang. 61	Sin. 61		

	Sin. 29	Dif.	Tang. 29	D. c.	Cot. 29	Cos. 29	Dif.	
0	9.68557	23	9.74375	30	0.25625	9.94182	7	60
1	9.68580	23	9.74405	30	0.25595	9.94175	7	59
2	9.68603	22	9.74435	30	0.25565	9.94168	7	58
3	9.68625	23	9.74465	29	0.25535	9.94161	7	57
4	9.68648	23	9.74494	30	0.25506	9.94154	7	56
5	9.68671	23	9.74524	30	0.25476	9.94147	7	55
6	9.68694	22	9.74554	29	0.25446	9.94140	7	54
7	9.68716	25	9.74583	30	0.25417	9.94133	7	53
8	9.68739	23	9.74613	30	0.25387	9.94126	7	52
9	9.68762	22	9.74643	30	0.25357	9.94119	7	51
10	9.68784	23	9.74673	29	0.25327	9.94112	7	50
11	9.68807	22	9.74702	30	0.25298	9.94105	7	49
12	9.68829	23	9.74732	30	0.25268	9.94098	8	48
13	9.68852	23	9.74762	29	0.25238	9.94090	7	47
14	9.68875	22	9.74791	30	0.25209	9.94083	7	46
15	9.68897	23	9.74821	30	0.25179	9.94076	7	45
16	9.68920	22	9.74851	29	0.25149	9.94069	7	44
17	9.68942	23	9.74880	30	0.25120	9.94062	7	43
18	9.68965	22	9.74910	29	0.25090	9.94055	7	42
19	9.68987	23	9.74939	30	0.25061	9.94048	7	41
20	9.69010	22	9.74969	29	0.25031	9.94041	7	40
21	9.69032	23	9.74998	30	0.25002	9.94034	7	39
22	9.69055	22	9.75028	30	0.24972	9.94027	7	38
23	9.69077	23	9.75058	29	0.24942	9.94020	8	37
24	9.69100	22	9.75087	30	0.24913	9.94012	7	36
25	9.69122	22	9.75117	29	0.24883	9.94005	7	35
26	9.69144	23	9.75146	30	0.24854	9.93998	7	34
27	9.69167	22	9.75176	29	0.24824	9.93991	7	33
28	9.69189	23	9.75205	30	0.24795	9.93984	7	32
29	9.69212	22	9.75235	29	0.24765	9.93977	7	31
30	9.69234		9.75264		0.24736	9.93970	7	30
	Cos. 60		Cot. 60		Tang. 60	Sin. 60		



'	sin. 29	Dif.	Tang. 29	D.c.	Cot. 29	Cos. 29	Dif.	'
30	9.69254	22	9.75264	30	0.24736	9.93970	7	30
31	9.69256	23	9.75294	29	0.24706	9.93963	8	29
32	9.69279	22	9.75323	30	0.24677	9.93955	7	28
33	9.69301	22	9.75353	29	0.24647	9.93948	7	27
34	9.69323	22	9.75382	29	0.24618	9.93941	7	26
35	9.69345	23	9.75411	30	0.24589	9.93934	7	25
36	9.69368	22	9.75441	29	0.24559	9.93927	7	24
37	9.69390	22	9.75470	30	0.24530	9.93920	8	23
38	9.69412	22	9.75500	29	0.24500	9.93912	7	22
39	9.69434	22	9.75529	30	0.24471	9.93905	7	21
40	9.69456	23	9.75558	29	0.24442	9.93898	7	20
41	9.69479	22	9.75588	30	0.24412	9.93891	7	19
42	9.69501	22	9.75617	29	0.24383	9.93884	7	18
43	9.69523	22	9.75647	30	0.24353	9.93876	8	17
44	9.69545	22	9.75676	29	0.24324	9.93869	7	16
45	9.69567	22	9.75705	30	0.24295	9.93862	7	15
46	9.69589	22	9.75735	29	0.24265	9.93855	7	14
47	9.69611	22	9.75764	30	0.24236	9.93847	8	13
48	9.69633	22	9.75793	29	0.24207	9.93840	7	12
49	9.69655	22	9.75822	30	0.24178	9.93833	7	11
50	9.69677	22	9.75852	29	0.24148	9.93826	7	10
51	9.69699	22	9.75881	30	0.24119	9.93819	7	9
52	9.69721	22	9.75910	29	0.24090	9.93811	8	8
53	9.69743	22	9.75939	30	0.24061	9.93804	7	7
54	9.69765	22	9.75969	29	0.24031	9.93797	7	6
55	9.69787	22	9.75998	30	0.24002	9.93789	8	5
56	9.69809	22	9.76027	29	0.23973	9.93782	7	4
57	9.69831	22	9.76056	30	0.23944	9.93775	7	3
58	9.69853	22	9.76086	29	0.23914	9.93768	7	2
59	9.69875	22	9.76115	30	0.23885	9.93760	8	1
60	9.69897	22	9.76144	29	0.23856	9.93753	7	0
	Cos. 60	ni2	Cot. 60		Tang. 60	Sin. 60		

'	Sin. 50	Dif.	Tang. 30	D. c.	Cot. 30	Cos. 30	Dif.	'
0	9.69897		9.76144		0.23856	9.93753		60
1	9.69919	22	9.76173	29	0.23827	9.93746	7	59
2	9.69941	22	9.76202	29	0.23798	9.93738	8	58
		22		29			7	
3	9.69963	21	9.76231	30	0.23769	9.93731	7	57
4	9.69984	21	9.76261	29	0.23739	9.93724	7	56
5	9.70006	21	9.76290	29	0.23710	9.93717	7	55
		22		29			8	
6	9.70028	22	9.76319	29	0.23681	9.93709	7	54
7	9.70050	22	9.76348	29	0.23652	9.93702	7	53
8	9.70072	22	9.76377	29	0.23623	9.93695	7	52
		21		29			8	
9	9.70093	22	9.76406	29	0.23594	9.93687	7	51
10	9.70115	22	9.76435	29	0.23565	9.93680	7	50
11	9.70137	22	9.76464	29	0.23536	9.93673	7	49
		22		29			8	
12	9.70159	21	9.76493	29	0.23507	9.93665	7	48
13	9.70180	22	9.76522	29	0.23478	9.93658	7	47
14	9.70202	22	9.76551	29	0.23449	9.93650	8	46
		22		29			7	
15	9.70224	21	9.76580	29	0.23420	9.93643	7	45
16	9.70245	22	9.76609	29	0.23391	9.93636	7	44
17	9.70267	22	9.76639	30	0.23361	9.93628	8	43
		21		29			7	
18	9.70288	22	9.76668	29	0.23332	9.93621	7	42
19	9.70310	22	9.76697	29	0.23303	9.93614	7	41
20	9.70332	22	9.76725	28	0.23275	9.93606	8	40
		21		29			7	
21	9.70353	22	9.76754	29	0.23246	9.93599	7	39
22	9.70375	21	9.76783	29	0.23217	9.93591	8	38
23	9.70396	22	9.76812	29	0.23188	9.93584	7	37
		22		29			7	
24	9.70418	21	9.76841	29	0.23159	9.93577	8	36
25	9.70439	22	9.76870	29	0.23130	9.93569	8	35
26	9.70461	21	9.76899	29	0.23101	9.93562	7	34
		21		29			8	
27	9.70482	22	9.76928	29	0.23072	9.93554	7	33
28	9.70504	22	9.76957	29	0.23043	9.93547	7	32
29	9.70525	21	9.76986	29	0.23014	9.93539	8	31
30	9.70547	22	9.77015	29	0.22985	9.93532	7	30
	Cos. 59		Cot. 59		Tang. 59	Sin. 59		

'	Sin. 30	Dif.	Tang. 30	D.c.	Cot. 30	Cos. 30	Dif.	'
30	9.70547	21	9.77015	29	0.22985	9.93532	7	30
31	9.70568	22	9.77044	29	0.22956	9.93525	8	29
32	9.70590	21	9.77073	28	0.22927	9.93517	7	28
33	9.70611	22	9.77101	29	0.22899	9.93510	8	27
34	9.70635	21	9.77130	29	0.22870	9.93502	7	26
35	9.70654	21	9.77159	29	0.22841	9.93495	8	25
36	9.70675	22	9.77188	29	0.22812	9.93487	7	24
37	9.70697	21	9.77217	29	0.22783	9.93480	8	23
38	9.70718	21	9.77246	28	0.22754	9.93472	7	22
39	9.70739	22	9.77274	29	0.22726	9.93465	8	21
40	9.70761	21	9.77303	29	0.22697	9.93457	7	20
41	9.70782	21	9.77332	29	0.22668	9.93450	8	19
42	9.70805	21	9.77361	29	0.22639	9.93442	7	18
43	9.70824	22	9.77390	28	0.22610	9.93435	8	17
44	9.70846	21	9.77418	29	0.22582	9.93427	7	16
45	9.70867	21	9.77447	29	0.22553	9.93420	8	15
46	9.70888	21	9.77476	29	0.22524	9.93412	7	14
47	9.70909	22	9.77505	28	0.22495	9.93405	8	13
48	9.70931	21	9.77533	29	0.22467	9.93397	7	12
49	9.70952	21	9.77562	29	0.22438	9.93390	8	11
50	9.70973	21	9.77591	28	0.22409	9.93382	7	10
51	9.70994	21	9.77619	29	0.22381	9.93375	8	9
52	9.71015	21	9.77648	29	0.22352	9.93367	7	8
53	9.71030	22	9.77677	29	0.22323	9.93360	8	7
54	9.71058	21	9.77706	28	0.22294	9.93352	7	6
55	9.71079	21	9.77734	29	0.22266	9.93344	8	5
56	9.71100	21	9.77763	28	0.22237	9.93337	7	4
57	9.71121	21	9.77791	29	0.22209	9.93329	8	3
58	9.71142	21	9.77820	29	0.22180	9.93322	7	2
59	9.71163	21	9.77849	28	0.22151	9.93314	8	1
60	9.71184	21	9.77877		0.22125	9.93307	7	0
	Cos. 59		Cot. 59		Tang. 59	Sin. 59		



'	Sin. 31	Dif.	Tang. 31	D.c.	Cot. 31	Cos. 31	Dif.	'
0	9.71184		9.77877		0.22123	9.95307		60
1	9.71205	21	9.77906	29	0.22094	9.95299	8	59
2	9.71226	21	9.77935	29	0.22065	9.95291	8	58
		21		28			7	
3	9.71247		9.77963		0.22037	9.95284		57
4	9.71268	21	9.77992	29	0.22008	9.95276	8	56
5	9.71289	21	9.78020	28	0.21980	9.95269	7	55
		21		29			8	
6	9.71310		9.78049		0.21951	9.95261		54
7	9.71331	21	9.78077	28	0.21923	9.95253	8	53
8	9.71352	21	9.78106	29	0.21894	9.95246	7	52
		21		29			8	
9	9.71373		9.78135		0.21865	9.95238		51
10	9.71393	20	9.78163	28	0.21837	9.95230	8	50
11	9.71414	21	9.78192	29	0.21808	9.95223	7	49
		21		28			8	
12	9.71435		9.78220		0.21780	9.95215		48
13	9.71456	21	9.78249	29	0.21751	9.95207	8	47
14	9.71477	21	9.78277	28	0.21723	9.95200	7	46
		21		29			8	
15	9.71498		9.78306		0.21694	9.95192		45
16	9.71519	21	9.78334	28	0.21666	9.95184	8	44
17	9.71539	20	9.78363	29	0.21637	9.95177	7	43
		21		28			8	
18	9.71560		9.78391		0.21609	9.95169		42
19	9.71581	21	9.78419	28	0.21581	9.95161	8	41
20	9.71602	21	9.78448	29	0.21552	9.95154	7	40
		20		28			8	
21	9.71622		9.78476		0.21524	9.95146		39
22	9.71643	21	9.78505	29	0.21495	9.95138	8	38
23	9.71664	21	9.78533	28	0.21467	9.95131	7	37
		21		29			8	
24	9.71685		9.78562		0.21438	9.95123		36
25	9.71705	20	9.78590	28	0.21410	9.95115	8	35
26	9.71726	21	9.78618	28	0.21382	9.95108	7	34
		21		29			8	
27	9.71747		9.78647		0.21353	9.95100		33
28	9.71767	20	9.78675	28	0.21325	9.95092	8	32
29	9.71788	21	9.78704	29	0.21296	9.95084	8	31
30	9.71809	21	9.78732	28	0.21268	9.95077	7	30
	Cos. 58		Cot. 58		Tang. 58	Sin. 58		

'	Sin. 31	Dif.	Tang. 31	D. c.	Cot. 31	Cos. 31	Dif.	'
30	9.71809	20	9.78732	28	0.21268	9.93077	8	30
31	9.71829	21	9.78760	29	0.21240	9.93069	8	29
32	9.71850	20	9.78789	28	0.21211	9.93061	8	28
33	9.71870	21	9.78817	28	0.21183	9.93053	8	27
34	9.71891	20	9.78845	29	0.21155	9.93046	7	26
35	9.71911	21	9.78874	28	0.21126	9.93038	8	25
36	9.71932	20	9.78902	28	0.21098	9.93030	8	24
37	9.71952	21	9.78930	29	0.21070	9.93022	8	23
38	9.71973	21	9.78959	28	0.21041	9.93014	8	22
39	9.71994	20	9.78987	28	0.21013	9.93007	7	21
40	9.72014	20	9.79015	28	0.20985	9.92999	8	20
41	9.72034	21	9.79043	29	0.20957	9.92991	8	19
42	9.72055	20	9.79072	28	0.20928	9.92983	8	18
43	9.72075	21	9.79100	28	0.20900	9.92976	7	17
44	9.72096	20	9.79128	28	0.20872	9.92968	8	16
45	9.72116	21	9.79156	29	0.20844	9.92960	8	15
46	9.72137	20	9.79185	28	0.20815	9.92952	8	14
47	9.72157	20	9.79213	28	0.20787	9.92944	8	13
48	9.72177	21	9.79241	28	0.20759	9.92936	8	12
49	9.72198	20	9.79269	28	0.20731	9.92929	7	11
50	9.72218	20	9.79297	29	0.20703	9.92921	8	10
51	9.72238	21	9.79326	28	0.20674	9.92913	8	9
52	9.72259	20	9.79354	28	0.20646	9.92905	8	8
53	9.72279	20	9.79382	28	0.20618	9.92897	8	7
54	9.72299	21	9.79410	28	0.20590	9.92889	8	6
55	9.72320	20	9.79438	28	0.20562	9.92881	8	5
56	9.72340	20	9.79466	29	0.20534	9.92874	7	4
57	9.72360	21	9.79495	28	0.20505	9.92866	8	3
58	9.72381	20	9.79523	28	0.20477	9.92858	8	2
59	9.72401	20	9.79551	28	0.20449	9.92850	8	1
60	9.72421	20	9.79579	28	0.20421	9.92842	8	0
	Cos. 58		Cot. 58		Tang. 58	Sin. 58		

'	Sin. 52	Dif.	Tang. 52	D.c.	Cot. 52	Cos. 52	Dif.	'
0	9.72421	20	9.79579	28	0.20421	9.92842	8	60
1	9.72441	20	9.79607	28	0.20393	9.92854	8	59
2	9.72461	21	9.79635	28	0.20365	9.92826	8	58
3	9.72482	20	9.79663	28	0.20337	9.92818	8	57
4	9.72502	20	9.79691	28	0.20309	9.92810	8	56
5	9.72522	20	9.79719	28	0.20281	9.92803	7	55
6	9.72542	20	9.79747	29	0.20253	9.92795	8	54
7	9.72562	20	9.79776	29	0.20224	9.92787	8	53
8	9.72582	20	9.79804	28	0.20196	9.92779	8	52
9	9.72602	20	9.79832	28	0.20168	9.92771	8	51
10	9.72622	21	9.79860	28	0.20140	9.92763	8	50
11	9.72643	20	9.79888	28	0.20112	9.92755	8	49
12	9.72663	20	9.79916	28	0.20084	9.92747	8	48
13	9.72683	20	9.79944	28	0.20056	9.92739	8	47
14	9.72703	20	9.79972	28	0.20028	9.92731	8	46
15	9.72723	20	9.80000	28	0.20000	9.92723	8	45
16	9.72743	20	9.80028	28	0.19972	9.92715	8	44
17	9.72763	20	9.80056	28	0.19944	9.92707	8	43
18	9.72783	20	9.80084	28	0.19916	9.92699	8	42
19	9.72803	20	9.80112	28	0.19888	9.92691	8	41
20	9.72823	20	9.80140	28	0.19860	9.92683	8	40
21	9.72843	20	9.80168	27	0.19832	9.92675	8	39
22	9.72863	20	9.80195	28	0.19805	9.92667	8	38
23	9.72883	19	9.80223	28	0.19777	9.92659	8	37
24	9.72902	20	9.80251	28	0.19749	9.92651	8	36
25	9.72922	20	9.80279	28	0.19721	9.92643	8	35
26	9.72942	20	9.80307	28	0.19693	9.92635	8	34
27	9.72962	20	9.80335	28	0.19665	9.92627	8	33
28	9.72982	20	9.80363	28	0.19637	9.92619	8	32
29	9.73002	20	9.80391	28	0.19609	9.92611	8	31
30	9.73022		9.80419		0.19581	9.92603	8	30
	Cos. 57		Cot. 57		Tang. 57	Sin. 57		



'	Sin. 32	Dif.	Tang. 32	D.c.	Cot. 32	Cos. 32	Dif.	'
30	9.73022	19	9.80419	28	0.19581	9.92603	8	30
31	9.73041	20	9.80447	27	0.19553	9.92596	8	29
32	9.73061	20	9.80474	28	0.19526	9.92587	8	28
33	9.73081	20	9.80502	28	0.19498	9.92579	8	27
34	9.73101	20	9.80530	28	0.19470	9.92571	8	26
35	9.73121	19	9.80558	28	0.19442	9.92563	8	25
36	9.73140	20	9.80586	28	0.19414	9.92555	8	24
37	9.73160	20	9.80614	28	0.19386	9.92546	9	23
38	9.73180	20	9.80642	27	0.19358	9.92538	8	22
39	9.73200	19	9.80669	28	0.19331	9.92530	8	21
40	9.73219	20	9.80697	28	0.19303	9.92522	8	20
41	9.73239	20	9.80725	28	0.19275	9.92514	8	19
42	9.73259	19	9.80753	28	0.19247	9.92506	8	18
43	9.73278	20	9.80781	27	0.19219	9.92498	8	17
44	9.73298	20	9.80808	28	0.19192	9.92490	8	16
45	9.73318	19	9.80836	28	0.19164	9.92482	9	15
46	9.73337	20	9.80864	28	0.19136	9.92473	8	14
47	9.73357	20	9.80892	27	0.19108	9.92465	8	13
48	9.73377	19	9.80919	28	0.19081	9.92457	8	12
49	9.73396	20	9.80947	28	0.19053	9.92449	8	11
50	9.73416	19	9.80975	28	0.19025	9.92441	8	10
51	9.73436	20	9.81003	27	0.18997	9.92433	8	9
52	9.73456	19	9.81030	28	0.18970	9.92425	9	8
53	9.73474	20	9.81058	28	0.18942	9.92416	8	7
54	9.73494	19	9.81086	27	0.18914	9.92408	8	6
55	9.73513	20	9.81113	28	0.18887	9.92400	8	5
56	9.73533	19	9.81141	28	0.18859	9.92392	8	4
57	9.73552	20	9.81169	27	0.18831	9.92384	8	3
58	9.73572	19	9.81196	28	0.18804	9.92376	9	2
59	9.73591	20	9.81224	28	0.18776	9.92367	8	1
60	9.73611		9.81252		0.18748	9.92359		0
	Cos. 57		Cot. 57		Tang. 57	Sin. 57		

'	Sin. 33	Dif.	Tang. 35	D.c.	Cot. 33	Cos. 33	Dif.	'
0	9.73611		9.81252		0.18748	9.92359		60
1	9.73630	19	9.81279	27	0.18721	9.92351	8	59
2	9.73650	20	9.81307	28	0.18695	9.92343	8	58
		19		28			8	
3	9.73669	20	9.81335	27	0.18665	9.92335	9	57
4	9.73689	20	9.81362	27	0.18638	9.92326	9	56
5	9.73708	19	9.81390	28	0.18610	9.92318	8	55
		19		28			8	
6	9.73727	20	9.81418	27	0.18582	9.92310	8	54
7	9.73747	19	9.81445	28	0.18555	9.92302	9	53
8	9.73766	19	9.81473	28	0.18527	9.92293	9	52
		19		27			8	
9	9.73785	20	9.81500	28	0.18500	9.92285	8	51
10	9.73805	19	9.81528	28	0.18472	9.92277	8	50
11	9.73824	19	9.81556	28	0.18444	9.92269	8	49
		19		27			9	
12	9.73843	20	9.81583	28	0.18417	9.92260	8	48
13	9.73863	19	9.81611	28	0.18389	9.92252	8	47
14	9.73882	19	9.81638	27	0.18362	9.92244	8	46
		19		28			9	
15	9.73901	20	9.81666	27	0.18334	9.92235	8	45
16	9.73921	19	9.81693	28	0.18307	9.92227	8	44
17	9.73940	19	9.81721	28	0.18279	9.92219	8	43
		19		27			8	
18	9.73959	19	9.81748	28	0.18252	9.92211	9	42
19	9.73978	19	9.81776	28	0.18224	9.92202	9	41
20	9.73997	19	9.81805	27	0.18197	9.92194	8	40
		20		28			8	
21	9.74017	19	9.81831	27	0.18169	9.92186	8	39
22	9.74036	19	9.81858	27	0.18142	9.92177	9	38
23	9.74055	19	9.81886	28	0.18114	9.92169	8	37
		19		27			8	
24	9.74074	19	9.81913	28	0.18087	9.92161	9	36
25	9.74093	20	9.81941	27	0.18059	9.92152	9	35
26	9.74115	19	9.81968	27	0.18032	9.92144	8	34
		19		28			8	
27	9.74132	19	9.81996	27	0.18004	9.92136	9	33
28	9.74151	19	9.82023	28	0.17977	9.92127	9	32
29	9.74170	19	9.82051	28	0.17949	9.92119	8	31
30	9.74189	19	9.82078	27	0.17922	9.92111	8	30
	Cos. 56		Cot. 56		Tang. 56	Sin. 56		

	Sin. 33	Dif.	Tang. 55	D.c.	Cot. 33	Cos. 35	Dif.	
30	9.74189	19	9.82078	28	0.17922	9.92111	9	30
31	9.74208	19	9.82106	27	0.17894	9.92102	8	29
32	9.74227	19	9.82133	28	0.17867	9.92094	8	28
33	9.74246	19	9.82161	27	0.17839	9.92086	9	27
34	9.74265	19	9.82188	27	0.17812	9.92077	8	26
35	9.74284	19	9.82215	28	0.17785	9.92069	9	25
36	9.74303	19	9.82243	27	0.17747	9.92060	8	24
37	9.74322	19	9.82270	28	0.17730	9.92052	8	23
38	9.74341	19	9.82298	27	0.17702	9.92044	9	22
39	9.74360	19	9.82325	27	0.17675	9.92035	8	21
40	9.74379	19	9.82352	28	0.17648	9.92027	9	20
41	9.74398	19	9.82380	27	0.17620	9.92018	8	19
42	9.74417	19	9.82407	28	0.17593	9.92010	8	18
43	9.74436	19	9.82435	27	0.17565	9.92002	9	17
44	9.74455	19	9.82462	28	0.17538	9.91993	8	16
45	9.74474	19	9.82489	27	0.17511	9.91985	9	15
46	9.74493	19	9.82517	28	0.17483	9.91976	8	14
47	9.74512	19	9.82544	27	0.17456	9.91968	9	13
48	9.74531	18	9.82571	28	0.17429	9.91959	8	12
49	9.74549	19	9.82599	27	0.17401	9.91951	9	11
50	9.74568	19	9.82626	28	0.17374	9.91942	8	10
51	9.74587	19	9.82653	27	0.17347	9.91934	9	9
52	9.74606	19	9.82681	28	0.17319	9.91925	8	8
53	9.74625	19	9.82708	27	0.17292	9.91917	9	7
54	9.74644	18	9.82735	28	0.17265	9.91908	8	6
55	9.74662	19	9.82762	27	0.17238	9.91900	9	5
56	9.74681	19	9.82790	28	0.17210	9.91891	8	4
57	6.74700	19	9.82817	27	0.17183	9.91883	9	3
58	9.74719	18	9.82844	27	0.17156	9.91874	8	2
59	9.74737	19	9.82871	28	0.17129	9.91866	9	1
60	9.74756	19	9.82899	27	0.17101	9.91857	8	0
	Cos. 56		Cot. 56		Tang. 56	Sin. 56		



'	Sin. 34	Dif.	Tang. 34	D.c.	Cot. 34	Cos. 34	Dif.	'
0	9.74756		9.82899		0.17101	9.91857		60
1	9.74775	19	9.82926	27	0.17074	9.91849	8	59
2	9.74794	19	9.82953	27	0.17047	9.91840	9	58
		18		27			8	
3	9.74812		9.82980		0.17020	9.91832		57
4	9.74831	19	9.83008	28	0.16992	9.91823	9	56
5	9.74850	19	9.83035	27	0.16965	9.91815	8	55
		18		27			9	
6	9.74868		9.83062		0.16938	9.91806		54
7	9.74887	19	9.83089	27	0.16911	9.91798	8	53
8	9.74906	19	9.83117	28	0.16883	9.91789	9	52
		18		27			8	
9	9.74924		9.83144		0.16856	9.91781		51
10	9.74943	19	9.83171	27	0.16829	9.91772	9	50
11	9.74961	18	9.83198	27	0.16802	9.91763	9	49
		19		27			8	
12	9.74980		9.83225		0.16775	9.91755		48
13	9.74999	19	9.83252	27	0.16748	9.91746	9	47
14	9.75017	18	9.83280	28	0.16720	9.91738	8	46
		19		27			9	
15	9.75036		9.83307		0.16693	9.91729		45
16	9.75054	18	9.83334	27	0.16666	9.91720	9	44
17	9.75073	19	9.83361	27	0.16639	9.91712	8	43
		18		27			9	
18	9.75091		9.83388		0.16612	9.91703		42
19	9.75110	19	9.83415	27	0.16585	9.91695	8	41
20	9.75128	18	9.83442	27	0.16558	9.91686	9	40
		19		28			9	
21	9.75147		9.83470		0.16530	9.91677		39
22	9.75165	18	9.83497	27	0.16503	9.91669	8	38
23	9.75184	19	9.83524	27	0.16476	9.91660	9	37
		18		27			9	
24	9.75202		9.83551		0.16449	9.91651		36
25	9.75221	19	9.83578	27	0.16422	9.91643	8	35
26	9.75239	18	9.83605	27	0.16395	9.91634	9	34
		19		27			9	
27	9.75258		9.83632		0.16368	9.91625		33
28	9.75276	18	9.83659	27	0.16341	9.91617	8	32
29	9.75294	18	9.83686	27	0.16314	9.91608	9	31
30	9.75313	19	9.83713	27	0.16287	9.91599	9	30
	Cos. 55		Cot. 55		Tang. 55	Sin. 55		

	Sin. 34	Dif.	Tang. 34	D. c.	Cot. 34	Cos. 34	Dif.	
30	9.75313		9.83713		0.16287	9.91599		30
31	9.75331	18	9.83740	27	0.16260	9.91591	8	29
32	9.75350	19	9.83768	38	0.16232	9.91582	9	28
		18		27			9	
33	9.75368		9.83795		0.16205	9.91573		27
34	9.75386	18	9.83822	27	0.16178	9.91565	8	26
35	9.75405	19	9.83849	27	0.16151	9.91556	9	25
		18		27			9	
36	9.75423		9.83876		0.16124	9.91547		24
37	9.75441	18	9.83905	27	0.16097	9.91538	9	23
38	9.75459	18	9.83930	27	0.16070	9.91530	8	22
		19		27			9	
39	9.75478		9.83957		0.16043	9.91521		21
40	9.75496	18	9.83984	27	0.16016	9.91512	9	20
41	9.75514	18	9.84011	27	0.15989	9.91504	8	19
		19		27			9	
42	9.75533		9.84038		0.15962	9.91495		18
43	9.75551	18	9.84065	27	0.15935	9.91486	9	17
44	9.75569	18	9.84092	27	0.15908	9.91477	9	16
		18		27			8	
45	9.75587		9.84119		0.15881	9.91469		15
46	9.75605	18	9.84146	27	0.15854	9.91460	9	14
47	9.75624	19	9.84173	27	0.15827	9.91451	9	13
		18		27			9	
48	9.75642		9.84200		0.15800	9.91442		12
49	9.75660	18	9.84227	27	0.15773	9.91433	9	11
50	9.75678	18	9.84254	27	0.15746	9.91425	8	10
		18		26			9	
51	9.75696		9.84280		0.15720	9.91416		9
52	9.75714	18	9.84307	27	0.15693	9.91407	9	8
53	9.75733	19	9.84334	27	0.15666	9.91398	9	7
		18		27			9	
54	9.75751		9.84361		0.15639	9.91389		6
55	9.75769	18	9.84388	27	0.15612	9.91381	8	5
56	9.75787	18	9.84415	27	0.15585	9.91372	9	4
		18		27			9	
57	9.75805		9.84442		0.15558	9.91363		3
58	9.75823	18	9.84469	27	0.15531	9.91354	9	2
59	9.75841	18	9.84496	27	0.15504	9.91345	9	1
60	9.75859		9.84523		0.15477	9.91336		0
	Cos. 55		Cot. 55		Tang. 55	Sin. 55		

	Sin. 55	Dif.	Tang. 55	D.c.	Cot. 55	Cos. 55	Dif.	
0	9.75859	18	9.84523		0.15477	9.91336		60
1	9.75877	18	9.84550	27	0.15450	9.91328	8	59
2	9.75895	18	9.84576	26	0.15424	9.91319	9	58
		18		27			9	
3	9.75913	18	9.84603		0.15397	9.91310		57
4	9.75931	18	9.84630	27	0.15370	9.91301	9	56
5	9.75949	18	9.84657	27	0.15343	9.91292	9	55
		18		27			9	
6	9.75967	18	9.84684		0.15316	9.91283		54
7	9.75985	18	9.84711	27	0.15289	9.91274	9	53
8	9.76003	18	9.84738	27	0.15262	9.91266	8	52
		18		26			9	
9	9.76021	18	9.84764		0.15236	9.91257		51
10	9.76039	18	9.84791	27	0.15209	9.91248	9	50
11	9.76057	18	9.84818	27	0.15182	9.91239	9	49
		18		27			9	
12	9.76075	18	9.84845		0.15155	9.91230		48
13	9.76093	18	9.84872	27	0.15128	9.91221	9	47
14	9.76111	18	9.84899	27	0.15101	9.91212	9	46
		18		26			9	
15	9.76129	17	9.84925		0.15075	9.91203		45
16	9.76146	18	9.84952	27	0.15048	9.91194	9	44
17	9.76164	18	9.84979	27	0.15021	9.91185	9	43
		18		27			9	
18	9.76182	18	9.85006		0.14994	9.91176		42
19	9.76200	18	9.85033	27	0.14967	9.91167	9	41
20	9.76218	18	9.85059	26	0.14941	9.91158	9	40
		18		27			9	
21	9.76236	17	9.85086		0.14914	9.91149		39
22	9.76253	18	9.85113	27	0.14887	9.91141	8	38
23	9.76271	18	9.85140	27	0.14860	9.91132	9	37
		18		26			9	
24	9.76289	18	9.85166		0.14834	9.91123		36
25	9.76307	18	9.85193	27	0.14807	9.91114	9	35
26	9.76324	17	9.85220	27	0.14780	9.91105	9	34
		18		27			9	
27	9.76342	18	9.85247		0.14753	9.91096		33
28	9.76360	18	9.85273	26	0.14727	9.91087	9	32
29	9.76378	18	9.85300	27	0.14700	9.91078	9	31
30	9.76395	17	9.85327	27	0.14673	9.91069	9	30
	Cos. 54		Cot. 54		Tang. 54	Sin. 54		



	Sin. 35	Dif.	Tang. 35	D. c.	Cot. 35	Cos. 35	Dif.	
30	9.76595		9.85327		0.14673	9.91069		30
31	9.76413	18	9.85354	27	0.14646	9.91060	9	29
32	9.76431	18	9.85380	26	0.14620	9.91051	9	28
		17		27			9	
33	9.76448	18	9.85407	27	0.14595	9.91042	9	27
34	9.76466	18	9.85434	27	0.14566	9.91033	9	26
35	9.76484	18	9.85460	26	0.14540	9.91023	10	25
		17		27			9	
36	9.76501	18	9.85487	27	0.14513	9.91014	9	24
37	9.76519	18	9.85514	27	0.14486	9.91005	9	23
38	9.76537	18	9.85540	26	0.14460	9.90996	9	22
		17		27			9	
39	9.76554	18	9.85567	27	0.14433	9.90987	9	21
40	9.76572	18	9.85594	26	0.14406	9.90978	9	20
41	9.76590	18	9.85620	26	0.14380	9.90969	9	19
		17		27			9	
42	9.76607	18	9.85647	27	0.14353	9.90960	9	18
43	9.76625	17	9.85674	26	0.14326	9.90951	9	17
44	9.76642	18	9.85700	27	0.14300	9.90942	9	16
		18		27			9	
45	9.76660	17	9.85727	27	0.14273	9.90933	9	15
46	9.76677	18	9.85754	26	0.14246	9.90924	9	14
47	9.76695	17	9.85780	27	0.14220	9.90915	9	13
		18		27			9	
48	9.76712	18	9.85807	27	0.14193	9.90906	10	12
49	9.76730	17	9.85834	26	0.14166	9.90896	9	11
50	9.76747	18	9.85860	27	0.14140	9.90887	9	10
		17		26			9	
51	9.76765	18	9.85887	27	0.14113	9.90878	9	9
52	9.76782	18	9.85913	27	0.14087	9.90869	9	8
53	9.76800	17	9.85940	27	0.14060	9.90860	9	7
		18		27			9	
54	9.76817	18	9.85967	26	0.14033	9.90851	9	6
55	9.76835	17	9.85993	27	0.14007	9.90842	9	5
56	9.76852	18	9.86020	26	0.13980	9.90832	10	4
		17		26			9	
57	9.76870	17	9.86046	27	0.13954	9.90823	9	3
58	9.76887	17	9.86073	27	0.13927	9.90814	9	2
59	9.76904	18	9.86100	26	0.13900	9.90805	9	1
60	9.76922		9.86126	26	0.13874	9.90796	9	0
	Cos. 54		Cot. 54		Tang. 54	Sin. 54		

'	Sin. 36	Dif.	Tang.36	D.c.	Cot. 36	Cos. 36	Dif.	'
0	9.76922		9.86126		0.13874	9.90796		60
1	9.76959	17	9.86153	27	0.13847	9.90787	9	59
2	9.76997	18	9.86179	26	0.13821	9.90777	10	58
		17		27			9	
3	9.76974	17	9.86206	26	0.13794	9.90768	9	57
4	9.76991	17	9.86232	26	0.13768	9.90759	9	56
5	9.77009	18	9.86259	27	0.13741	9.90750	9	55
		17		26			9	
6	9.77026	17	9.86285	27	0.13715	9.90741	10	54
7	9.77043	17	9.86312	27	0.13688	9.90731	9	53
8	9.77061	18	9.86338	26	0.13662	9.90722	9	52
		17		27			9	
9	9.77078	17	9.86365	27	0.13635	9.90713	9	51
10	9.77095	17	9.86392	26	0.13608	9.90704	10	50
11	9.77112	17	9.86418	26	0.13582	9.90694	9	49
		18		27			9	
12	9.77130	17	9.86445	26	0.13555	9.90685	9	48
13	9.77147	17	9.86471	27	0.13529	9.90676	9	47
14	9.77164	17	9.86498	27	0.13502	9.90667	9	46
		17		26			10	
15	9.77181	18	9.86524	27	0.13476	9.90657	9	45
16	9.77199	17	9.86551	26	0.13449	9.90648	9	44
17	9.77216	17	9.86577	26	0.13423	9.90639	9	43
		17		26			9	
18	9.77233	17	9.86603	27	0.13397	9.90630	10	42
19	9.77250	17	9.86630	26	0.13370	9.90620	9	41
20	9.77268	18	9.86656	26	0.13344	9.90611	9	40
		17		27			9	
21	9.77285	17	9.86683	26	0.13317	9.90602	10	39
22	9.77302	17	9.86709	27	0.13291	9.90592	9	38
23	9.77319	17	9.86736	26	0.13264	9.90583	9	37
		17		26			9	
24	9.77336	17	9.86762	27	0.13238	9.90574	9	36
25	9.77353	17	9.86789	26	0.13211	9.90565	9	35
26	9.77370	17	9.86815	26	0.13185	9.90555	10	34
		17		27			9	
27	9.77387	18	9.86842	26	0.13158	9.90546	9	33
28	9.77405	17	9.86868	26	0.13132	9.90537	9	32
29	9.77422	17	9.86894	26	0.13106	9.90527	10	31
30	9.77439	17	9.86921	27	0.13079	9.90518	9	30
	Cos. 53		Cot. 53		Tang. 53	Sin. 53		

'	Sin. 36	Dif.	Tang. 36	D.c.	Cot. 36	Cos. 36	Dif.	'
30	9.77439		9.86921	26	0.13079	9.90518		30
31	9.77456	17	9.86947	26	0.13053	9.90509	9	29
32	9.77473	17	9.86974	27	0.13026	9.90499	10	28
		17		26			9	
33	9.77490	17	9.87000	27	0.13000	9.90490	10	27
34	9.77507	17	9.87027	26	0.12973	9.90480	9	26
35	9.77524	17	9.87053	26	0.12947	9.90471	9	25
		17		26			9	
36	9.77541	17	9.87079	27	0.12921	9.90462	10	24
37	9.77558	17	9.87106	26	0.12894	9.90452	9	23
38	9.77575	17	9.87132	26	0.12868	9.90443	9	22
		17		26			9	
39	9.77592	17	9.87158	27	0.12842	9.90434	10	21
40	9.77609	17	9.87185	26	0.12815	9.90424	9	20
41	9.77626	17	9.87211	26	0.12789	9.90415	10	19
		17		27			9	
42	9.77643	17	9.87238	26	0.12762	9.90405	9	18
43	9.77660	17	9.87264	26	0.12736	9.90396	10	17
44	9.77677	17	9.87290	26	0.12710	9.90386	9	16
		17		27			9	
45	9.77694	17	9.87317	26	0.12683	9.90377	9	15
46	9.77711	17	9.87343	26	0.12657	9.90368	10	14
47	9.77728	16	9.87369	27	0.12631	9.90358	9	13
		16		27			9	
48	9.77744	17	9.87396	26	0.12604	9.90349	10	12
49	9.77761	17	9.87422	26	0.12578	9.90339	9	11
50	9.77778	17	9.87448	26	0.12552	9.90330	10	10
		17		27			9	
51	9.77795	17	9.87475	26	0.12525	9.90320	9	9
52	9.77812	17	9.87501	26	0.12499	9.90311	10	8
53	9.77829	17	9.87527	26	0.12473	9.90301	9	7
		17		27			9	
54	9.77846	16	9.87554	26	0.12446	9.90292	10	6
55	9.77862	17	9.87580	26	0.12420	9.90282	9	5
56	9.77879	17	9.87606	26	0.12394	9.90273	10	4
		17		27			9	
57	6.77896	17	9.87633	26	0.12367	9.90263	9	3
58	9.77913	17	9.87659	26	0.12341	9.90254	10	2
59	9.77930	16	9.87685	26	0.12315	9.90244	9	1
60	9.77946	16	9.87711	26	0.12289	9.90235	9	0
	Cos. 53		Cot. 53		Tang. 53	Sin. 53		



'	Sin. 37	Dif.	Tang. 57	D.c.	Cot. 37	Cos. 37	Dif.	'
0	9.77946		9.87711		0.12289	9.90255		60
1	9.77963	17	9.87738	27	0.12262	9.90225	10	59
2	9.77980	17	9.87764	26	0.12236	9.90216	9	58
3	9.77997	17	9.87790	26	0.12210	9.90206	10	57
4	9.78013	16	9.87817	27	0.12185	9.90197	9	56
5	9.78030	17	9.87843	26	0.12157	9.90187	10	55
6	9.78047	17	9.87869	26	0.12131	9.90178	9	54
7	9.78063	16	9.87895	26	0.12105	9.90168	10	53
8	9.78080	17	9.87922	27	0.12078	9.90159	9	52
9	9.78097	17	9.87948	26	0.12052	9.90149	10	51
10	9.78113	16	9.87974	26	0.12026	9.90139	10	50
11	9.78130	17	9.88000	26	0.12000	9.90130	9	49
12	9.78147	17	9.88027	27	0.11973	9.90120	10	48
13	9.78163	16	9.88053	26	0.11947	9.90111	9	47
14	9.78180	17	9.88079	26	0.11921	9.90101	10	46
15	9.78197	17	9.88105	26	0.11895	9.90091	10	45
16	9.78213	16	9.88131	26	0.11869	9.90082	9	44
17	9.78230	17	9.88158	27	0.11842	9.90072	10	43
18	9.78246	16	9.88184	26	0.11816	9.90063	9	42
19	9.78263	17	9.88210	26	0.11790	9.90053	10	41
20	9.78280	17	9.88236	26	0.11764	9.90043	10	40
21	9.78296	16	9.88262	26	0.11738	9.90034	9	39
22	9.78313	17	9.88289	27	0.11711	9.90024	10	38
23	9.78329	16	9.88315	26	0.11685	9.90014	10	37
24	9.78346	17	9.88341	26	0.11659	9.90005	9	36
25	9.78362	16	9.88367	26	0.11633	9.89995	10	35
26	9.78379	17	9.88393	26	0.11607	9.89985	10	34
27	9.78395	16	9.88420	27	0.11580	9.89976	9	33
28	9.78412	17	9.88446	26	0.11554	9.89966	10	32
29	9.78428	16	9.88472	26	0.11528	9.89956	10	31
30	9.78445	17	9.88498	26	0.11502	9.89947	9	30
	Cos. 52		Cot. 52		Tang. 52	Sin. 52		

'	Sin. 57	Dif.	Tang. 37	D.c.	Cot. 37	Cos. 37	Dif.	'
30	9.78445	16	9.88498	26	0.11502	9.89947	10	30
31	9.78461	17	9.88524	26	0.11476	9.89957	10	29
32	9.78478	16	9.88550	27	0.11450	9.89927	10	28
33	9.78494	16	9.88577	26	0.11423	9.89918	10	27
34	9.78510	17	9.88603	26	0.11397	9.89908	10	26
35	9.78527	16	9.88629	26	0.11371	9.89898	10	25
36	9.78543	17	9.88655	26	0.11345	9.89888	10	24
37	9.78560	16	9.88681	26	0.11319	9.89879	9	23
38	9.78576	16	9.88707	26	0.11293	9.89869	10	22
39	9.78592	17	9.88733	26	0.11267	9.89859	10	21
40	9.78609	16	9.88759	26	0.11241	9.89849	10	20
41	9.78625	17	9.88786	27	0.11214	9.89840	9	19
42	9.78642	16	9.88812	26	0.11188	9.89830	10	18
43	9.78658	16	9.88838	26	0.11162	9.89820	10	17
44	9.78674	17	9.88864	26	0.11136	9.89810	10	16
45	9.78691	16	9.88890	26	0.11110	9.89801	9	15
46	9.78707	16	9.88916	26	0.11084	9.89791	10	14
47	9.78723	16	9.88942	26	0.11058	9.89781	10	13
48	9.78739	17	9.88968	26	0.11032	9.89771	10	12
49	9.78756	16	9.88994	26	0.11006	9.89761	10	11
50	9.78772	16	9.89020	26	0.10980	9.89752	9	10
51	9.78788	17	9.89046	27	0.10954	9.89742	10	9
52	9.78805	16	9.89073	26	0.10927	9.89732	10	8
53	9.78821	16	9.89099	26	0.10901	9.89722	10	7
54	9.78837	16	9.89125	26	0.10875	9.89712	10	6
55	9.78853	16	9.89151	26	0.10849	9.89702	10	5
56	9.78869	17	9.89177	26	0.10823	9.89693	9	4
57	9.78886	16	9.89203	26	0.10797	9.89683	10	3
58	9.78902	16	9.89229	26	0.10771	9.89673	10	2
59	9.78918	16	9.89255	26	0.10745	9.89663	10	1
60	9.78934	16	9.89281	26	0.10719	9.89653	10	0
	Cos. 52		Cot. 52		Tang. 52	Sin. 52		

'	Sin. 38	Dif.	Tang. 38	D.c.	Cot. 38	Cos. 38	Dif.	'
0	9.78954	16	9.89281	26	0.10719	9.89653	10	60
1	9.78950	17	9.89307	26	0.10693	9.89643	10	59
2	9.78967	16	9.89335	26	0.10667	9.89633	10	58
3	9.78983	16	9.89359	26	0.10641	9.89624	9	57
4	9.78999	16	9.89385	26	0.10615	9.89614	10	56
5	9.79015	16	9.89411	26	0.10589	9.89604	10	55
6	9.79031	16	9.89437	26	0.10563	9.89594	10	54
7	9.79047	16	9.89463	26	0.10537	9.89584	10	53
8	9.79063	16	9.89489	26	0.10511	9.89574	10	52
9	9.79079	16	9.89515	26	0.10485	9.89564	10	51
10	9.79095	16	9.89541	26	0.10459	9.89554	10	50
11	9.79111	17	9.89567	26	0.10433	9.89544	10	49
12	9.79128	16	9.89593	26	0.10407	9.89534	10	48
13	9.79144	16	9.89619	26	0.10381	9.89524	10	47
14	9.79160	16	9.89645	26	0.10355	9.89514	10	46
15	9.79176	16	9.89671	26	0.10329	9.89504	9	45
16	9.79192	16	9.89697	26	0.10303	9.89495	10	44
17	9.79208	16	9.89723	26	0.10277	9.89485	10	43
18	9.79224	16	9.89749	26	0.10251	9.89475	10	42
19	9.79240	16	9.89775	26	0.10225	9.89465	10	41
20	9.79256	16	9.89801	26	0.10199	9.89455	10	40
21	9.79272	16	9.89827	26	0.10173	9.89445	10	39
22	9.79288	16	9.89853	26	0.10147	9.89435	10	38
23	9.79304	15	9.89879	26	0.10121	9.89425	10	37
24	9.79319	16	9.89905	26	0.10095	9.89415	10	36
25	9.79335	16	9.89931	26	0.10069	9.89405	10	35
26	9.79351	16	9.89957	26	0.10043	9.89395	10	34
27	9.79367	16	9.89983	26	0.10017	9.89385	10	33
28	9.79383	16	9.90009	26	0.09991	9.89375	11	32
29	9.79399	16	9.90035	26	0.09965	9.89364	10	31
30	9.79415	16	9.90061	26	0.09939	9.89354	10	30
	Cos. 51		Cot. 51		Tang. 51	Sin. 51		



'	Sin. 38	Dif.	Tang. 38	D. c.	Cot. 38	Cos. 38	Dif.	'
30	9.79415	16	9.90061	25	0.09939	9.89354	10	30
31	9.79431	16	9.90086	26	0.09914	9.89344	10	29
32	9.79447	16	9.90112	26	0.09888	9.89334	10	28
33	9.79463	15	9.90138	26	0.09862	9.89324	10	27
34	9.79478	16	9.90164	26	0.09836	9.89314	10	26
35	9.79494	16	9.90190	26	0.09810	9.89304	10	25
36	9.79510	16	9.90216	26	0.09784	9.89294	10	24
37	9.79526	16	9.90242	26	0.09758	9.89284	10	23
38	9.79542	16	9.90268	26	0.09732	9.89274	10	22
39	9.79558	15	9.90294	26	0.09706	9.89264	10	21
40	9.79573	16	9.90320	26	0.09680	9.89254	10	20
41	9.79589	16	9.90346	25	0.09654	9.89244	11	19
42	9.79605	16	9.90371	26	0.09629	9.89233	10	18
43	9.79621	15	9.90397	26	0.09603	9.89223	10	17
44	9.79636	16	9.90423	26	0.09577	9.89213	10	16
45	9.79652	16	9.90449	26	0.09551	9.89203	10	15
46	9.79668	16	9.90475	26	0.09525	9.89193	10	14
47	9.79684	15	9.90501	26	0.09499	9.89183	10	13
48	9.79699	16	9.90527	26	0.09473	9.89173	11	12
49	9.79715	16	9.90553	25	0.09447	9.89162	10	11
50	9.79731	15	9.90578	26	0.09422	9.89152	10	10
51	9.79746	16	9.90604	26	0.09396	9.89142	10	9
52	9.79762	16	9.90630	26	0.09370	9.89132	10	8
53	9.79778	15	9.90656	26	0.09344	9.89122	10	7
54	9.79793	16	9.90682	26	0.09318	9.89112	11	6
55	9.79809	16	9.90708	26	0.09292	9.89101	10	5
56	9.79825	15	9.90734	25	0.09266	9.89091	10	4
57	9.79840	16	9.90759	26	0.09241	9.89081	10	3
58	9.79856	16	9.90785	26	0.09215	9.89071	11	2
59	9.79872	15	9.90811	26	0.09189	9.89060	10	1
60	9.79887	15	9.90837	26	0.09163	9.89050	10	0
	Cos. 51		Cot. 51		Tang. 51	Sin. 51		

'	Sin. 39	Dif.	Tang. 39	D.c.	Cot. 39	Cos. 39	Dif.	'
0	9.79887	16	9.90837	26	0.09163	9.89050	10	60
1	9.79903	15	9.90863	26	0.09137	9.89040	10	59
2	9.79918	16	9.90889	25	0.09111	9.89030	10	58
3	9.79934	16	9.90914	26	0.09086	9.89020	11	57
4	9.79950	15	9.90940	26	0.09060	9.89009	10	56
5	9.79965	16	9.90966	26	0.09034	9.88999	10	55
6	9.79981	15	9.90992	26	0.09008	9.88989	11	54
7	9.79996	16	9.91018	25	0.08982	9.88978	10	53
8	9.80012	15	9.91043	26	0.08957	9.88968	10	52
9	9.80027	16	9.91069	26	0.08931	9.88958	10	51
10	9.80043	15	9.91095	26	0.08905	9.88948	11	50
11	9.80058	16	9.91121	26	0.08879	9.88937	10	49
12	9.80074	15	9.91147	25	0.08853	9.88927	10	48
13	9.80089	16	9.91172	26	0.08828	9.88917	11	47
14	9.80105	15	9.91198	26	0.08802	9.88906	10	46
15	9.80120	16	9.91224	26	0.08776	9.88896	10	45
16	9.80136	15	9.91250	26	0.08750	9.88886	11	44
17	9.80151	15	9.91276	25	0.08724	9.88875	10	43
18	9.80166	16	9.91301	26	0.08699	9.88865	10	42
19	9.80182	15	9.91327	26	0.08673	9.88855	11	41
20	9.80197	16	9.91353	26	0.08647	9.88844	10	40
21	9.80213	15	9.91379	25	0.08621	9.88834	10	39
22	9.80228	16	9.91404	26	0.08596	9.88824	11	38
23	9.80244	15	9.91430	26	0.08570	9.88813	10	37
24	9.80259	15	9.91456	26	0.08544	9.88803	10	36
25	9.80274	16	9.91482	25	0.08518	9.88793	11	35
26	9.80290	15	9.91507	26	0.08493	9.88782	10	34
27	9.80305	15	9.91533	26	0.08467	9.88772	11	33
28	9.80320	16	9.91559	26	0.08441	9.88761	10	32
29	9.80336	15	9.91585	25	0.08415	9.88751	10	31
30	9.80351	15	9.91610	25	0.08390	9.88741	10	30
	Cos. 50		Cot. 50		Tang. 50	Sin. 50		

	Sin. 39	Dif.	Tang. 39	D. c.	Cot. 39	Cos. 39	Dif.	
30	9.80351	15	9.91610	26	0.08390	9.88741		30
31	9.80366	16	9.91636	26	0.08364	9.88730	11	29
32	9.80382	15	9.91662	26	0.08338	9.88720	10	28
							11	
33	9.80397	15	9.91688	25	0.08312	9.88709	10	27
34	9.80412	16	9.91713	26	0.08287	9.88699	11	26
35	9.80428	15	9.91739	26	0.08261	9.88688	10	25
							11	
36	9.80443	15	9.91765	26	0.08235	9.88678	10	24
37	9.80458	15	9.91791	25	0.08209	9.88668	11	23
38	9.80473	16	9.91816	26	0.08184	9.88657	10	22
							11	
39	9.80489	15	9.91842	26	0.08158	9.88647	10	21
40	9.80504	15	9.91868	25	0.08132	9.88636	11	20
41	9.80519	15	9.91893	26	0.08107	9.88626	10	19
							11	
42	9.80534	16	9.91919	26	0.08081	9.88615	10	18
43	9.80550	15	9.91945	26	0.08055	9.88605	11	17
44	9.80565	15	9.91971	25	0.08029	9.88594	10	16
							11	
45	9.80580	15	9.91996	26	0.08004	9.88584	11	15
46	9.80595	15	9.92022	26	0.07978	9.88573	10	14
47	9.80610	15	9.92048	25	0.07952	9.88563	11	13
							10	
48	9.80625	16	9.92075	26	0.07927	9.88552	11	12
49	9.80641	15	9.92099	26	0.07901	9.88542	10	11
50	9.80656	15	9.92125	25	0.07875	9.88531	11	10
							10	
51	9.80671	15	9.92150	26	0.07850	9.88521	11	9
52	9.80686	15	9.92176	26	0.07824	9.88510	11	8
53	9.80701	15	9.92202	26	0.07798	9.88499	11	7
							10	
54	9.80716	15	9.92227	26	0.07773	9.88489	11	6
55	9.80731	15	9.92253	26	0.07747	9.88478	10	5
56	9.80746	16	9.92279	25	0.07721	9.88468	11	4
							10	
57	9.80762	15	9.92304	26	0.07696	9.88457	11	3
58	9.80777	15	9.92330	26	0.07670	9.88447	10	2
59	9.80792	15	9.92356	25	0.07644	9.88436	11	1
60	9.80807	15	9.92381	25	0.07619	9.88425	11	0
	Cos. 50		Cot. 50		Tang. 50	Sin. 50		



'	Sin. 40	Dif.	Tang. 40	D.c.	Cot. 40	Cos. 40	Dif.	'
0	9.80807	15	9.92381	26	0.07619	9.88425	10	60
1	9.80822	15	9.92407	26	0.07593	9.88415	11	59
2	9.80837	15	9.92433	25	0.07567	9.88404	10	58
3	9.80852	15	9.92458	26	0.07542	9.88394	11	57
4	9.80867	15	9.92484	26	0.07516	9.88383	11	56
5	9.80882	15	9.92510	25	0.07490	9.88372	10	55
6	9.80897	15	9.92535	26	0.07465	9.88362	11	54
7	9.80912	15	9.92561	26	0.07439	9.88351	11	53
8	9.80927	15	9.92587	25	0.07413	9.88340	10	52
9	9.80942	15	9.92612	26	0.07388	9.88330	11	51
10	9.80957	15	9.92638	25	0.07362	9.88319	11	50
11	9.80972	15	9.92663	26	0.07337	9.88308	10	49
12	9.80987	15	9.92689	26	0.07311	9.88298	11	48
13	9.81002	15	9.92715	25	0.07285	9.88287	11	47
14	9.81017	15	9.92740	26	0.07260	9.88276	10	46
15	9.81032	15	9.92766	26	0.07234	9.88266	11	45
16	9.81047	14	9.92792	25	0.07208	9.88255	11	44
17	9.81061	15	9.92817	26	0.07183	9.88244	10	43
18	9.81076	15	9.92843	25	0.07157	9.88234	11	42
19	9.81091	15	9.92868	26	0.07132	9.88223	11	41
20	9.81106	15	9.92894	26	0.07106	9.88212	11	40
21	9.81121	15	9.92920	25	0.07080	9.88201	10	39
22	9.81136	15	9.92945	26	0.07055	9.88191	11	38
23	9.81151	15	9.92971	25	0.07029	9.88180	11	37
24	9.81166	14	9.92996	26	0.07004	9.88169	11	36
25	9.81180	15	9.93022	26	0.06978	9.88158	10	35
26	9.81195	15	9.93048	25	0.06952	9.88148	11	34
27	9.81210	15	9.93073	26	0.06927	9.88137	11	33
28	9.81225	15	9.93099	25	0.06901	9.88126	11	32
29	9.81240	14	9.93124	26	0.06876	9.88115	10	31
30	9.81254	14	9.93150	26	0.06850	9.88105	10	30
	Cos. 49		Cot. 49		Tang. 49	Sin. 49		

'	Sin. 40	Dif.	Tang. 40	D.c.	Cot. 40	Cos. 37	Dif.	'
30	9.81254		9.93150		0.06850	9.88105		30
31	9.81269	15	9.93175	25	0.06825	9.88094	11	29
32	9.81284	15	9.93201	26	0.06799	9.88083	11	28
		15		26			11	
33	9.81299	15	9.93227	25	0.06773	9.88072	11	27
34	9.81314	15	9.93252	25	0.06748	9.88061	11	26
35	9.81328	14	9.93278	26	0.06722	9.88051	10	25
		15		25			11	
36	9.81343	15	9.93303	26	0.06697	9.88040	11	24
37	9.81358	15	9.93329	25	0.06671	9.88029	11	23
38	9.81372	14	9.93354	25	0.06646	9.88018	11	22
		15		26			11	
39	9.81387	15	9.93380	26	0.06620	9.88007	11	21
40	9.81402	15	9.93406	25	0.06594	9.87996	11	20
41	9.81417	15	9.93431	25	0.06569	9.87985	11	19
		14		26			10	
42	9.81431	15	9.93457	25	0.06543	9.87975	11	18
43	9.81446	15	9.93482	26	0.06518	9.87964	11	17
44	9.81461	15	9.93508	26	0.06492	9.87953	11	16
		14		25			11	
45	9.81475	15	9.93533	26	0.06467	9.87942	11	15
46	9.81490	15	9.93559	25	0.06441	9.87931	11	14
47	9.81505	15	9.93584	25	0.06416	9.87920	11	13
		14		26			11	
48	9.81519	15	9.93610	26	0.06390	9.87909	11	12
49	9.81534	15	9.93636	26	0.06364	9.87898	11	11
50	9.81549	15	9.93661	25	0.06339	9.87887	11	10
		14		26			10	
51	9.81563	15	9.93687	25	0.06313	9.87877	11	9
52	9.81578	15	9.93712	25	0.06288	9.87866	11	8
53	9.81592	14	9.93738	26	0.06262	9.87855	11	7
		15		25			11	
54	9.81607	15	9.93763	26	0.06237	9.87844	11	6
55	9.81622	15	9.93789	26	0.06211	9.87833	11	5
56	9.81636	14	9.93814	25	0.06186	9.87822	11	4
		15		26			11	
57	9.81651	14	9.93840	25	0.06160	9.87811	11	3
58	9.81665	15	9.93865	26	0.06135	9.87800	11	2
59	9.81680	15	9.93891	26	0.06109	9.87789	11	1
60	9.81694	14	9.93916	25	0.06084	9.87778	11	0
	Cos. 49		Cot. 49		Tang. 49	Sin. 49		

'	Sin. 41	Dif.	Fang. 41	D.c.	Cot. 41	Cos. 41	Dif.	'
0	9.81694	15	9.93916	26	0.06084	9.87778	11	60
1	9.81709	14	9.93942	25	0.06058	9.87767	11	59
2	9.81723	15	9.93967	26	0.06033	9.87756	11	58
3	9.81738	14	9.93993	25	0.06007	9.87745	11	57
4	9.81752	15	9.94018	26	0.05982	9.87734	11	56
5	9.81767	14	9.94044	25	0.05956	9.87723	11	55
6	9.81781	15	9.94069	26	0.05931	9.87712	11	54
7	9.81796	14	9.94095	25	0.05905	9.87701	11	53
8	9.81810	15	9.94120	26	0.05880	9.87690	11	52
9	9.81825	14	9.94146	25	0.05854	9.87679	11	51
10	9.81839	15	9.94171	26	0.05829	9.87668	11	50
11	9.81854	14	9.94197	25	0.05803	9.87657	11	49
12	9.81868	15	9.94222	26	0.05778	9.87646	11	48
13	9.81882	14	9.94248	25	0.05752	9.87635	11	47
14	9.81897	15	9.94273	26	0.05727	9.87624	11	46
15	9.81911	14	9.94299	25	0.05701	9.87613	12	45
16	9.81926	15	9.94324	26	0.05676	9.87601	11	44
17	9.81940	14	9.94350	25	0.05650	9.87590	11	43
18	9.81955	15	9.94375	26	0.05625	9.87579	11	42
19	9.81969	14	9.94401	25	0.05599	9.87568	11	41
20	9.81983	15	9.94426	26	0.05574	9.87557	11	40
21	9.81998	14	9.94452	25	0.05548	9.87546	11	39
22	9.82012	15	9.94477	26	0.05523	9.87535	11	38
23	9.82026	14	9.94503	25	0.05497	9.87524	11	37
24	9.82041	15	9.94528	26	0.05472	9.87513	12	36
25	9.82055	14	9.94554	25	0.05446	9.87501	11	35
26	9.82069	15	9.94579	26	0.05421	9.87490	11	34
27	9.82084	14	9.94604	25	0.05396	9.87479	11	33
28	9.82098	15	9.94630	26	0.05370	9.87468	11	32
29	9.82112	14	9.94655	25	0.05345	9.87457	11	31
30	9.82126	14	9.94681	26	0.05319	9.87446	11	30
	Cos. 48		Cot. 48		Fang. 48	Sin. 48		



'	Sin. 41	Dif.	Tang. 41	D.c.	Cot. 36	Cos. 41	Dif.	'
30	9.82126	15	9.94681	25	0.05319	9.87446	12	30
31	9.82141	14	9.94706	26	0.05291	9.87434	11	29
32	9.82155	14	9.94732	25	0.05268	9.87423	11	28
33	9.82169	15	9.94757	26	0.05243	9.87412	11	27
34	9.82184	14	9.94783	25	0.05217	9.87401	11	26
35	9.82198	14	9.94808	26	0.05192	9.87390	12	25
36	9.82212	14	9.94834	25	0.05166	9.87378	11	24
37	9.82226	14	9.94859	25	0.05141	9.87367	11	23
38	9.82240	15	9.94884	26	0.05116	9.87356	11	22
39	9.82255	14	9.94910	25	0.05090	9.87345	11	21
40	9.82269	14	9.94935	26	0.05065	9.87334	12	20
41	9.82283	14	9.94961	25	0.05039	9.87322	11	19
42	9.82297	14	9.94986	26	0.05014	9.87311	11	18
43	9.82311	15	9.95012	25	0.04988	9.87300	12	17
44	9.82326	14	9.95037	26	0.04963	9.87288	11	16
45	9.82340	14	9.95062	25	0.04938	9.87277	11	15
46	9.82354	14	9.95088	26	0.04912	9.87266	11	14
47	9.82368	14	9.95113	25	0.04887	9.87255	12	13
48	9.82382	14	9.95139	26	0.04861	9.87243	11	12
49	9.82396	14	9.95164	25	0.04836	9.87232	11	11
50	9.82410	14	9.95190	26	0.04810	9.87221	12	10
51	9.82424	15	9.95215	25	0.04785	9.87209	11	9
52	9.82439	14	9.95240	26	0.04760	9.87198	11	8
53	9.82453	14	9.95266	25	0.04734	9.87187	12	7
54	9.82467	14	9.95291	26	0.04709	9.87175	11	6
55	9.82481	14	9.95317	25	0.04683	9.87164	11	5
56	9.82495	14	9.95342	26	0.04658	9.87153	12	4
57	9.82509	14	9.95368	25	0.04632	9.87141	11	3
58	9.82523	14	9.95393	25	0.04607	9.87130	11	2
59	9.82537	14	9.95418	26	0.04582	9.87119	12	1
60	9.82551	14	9.95444	26	0.04556	9.87107	12	0
	Cos. 48		Cot. 48		Tang. 48	Sin. 48		

'	Sin. 42	Dif.	Tang. 42	D. c.	Cot. 42	Cos. 42	Dif.	'
0	9.82551		9.95444		0.04556	9.87107		60
1	9.82565	14	9.95469	25	0.04551	9.87096	11	59
2	9.82579	14	9.95495	26	0.04505	9.87085	11	58
		14		25			12	
3	9.82593	14	9.95520	25	0.04480	9.87073	11	57
4	9.82607	14	9.95545	25	0.04455	9.87062	12	56
5	9.82621	14	9.95571	26	0.04429	9.87050	12	55
		14		25			11	
6	9.82635	14	9.95596	26	0.04404	9.87039	11	54
7	9.82649	14	9.95622	25	0.04378	9.87028	12	53
8	9.82663	14	9.95647	25	0.04353	9.87016	12	52
		14		25			11	
9	9.82677	14	9.95672	26	0.04328	9.87005	12	51
10	9.82691	14	9.95698	25	0.04302	9.86993	11	50
11	9.82705	14	9.95723	25	0.04277	9.86982	12	49
		14		25			12	
12	9.82719	14	9.95748	26	0.04252	9.86970	11	48
13	9.82733	14	9.95774	25	0.04226	9.86959	12	47
14	9.82747	14	9.95799	25	0.04201	9.86947	12	46
		14		26			11	
15	9.82761	14	9.95825	25	0.04175	9.86936	12	45
16	9.82775	13	9.95850	25	0.04150	9.86924	11	44
17	9.82788	14	9.95875	26	0.04125	9.86913	11	43
		14		26			11	
18	9.82802	14	9.95901	25	0.04099	9.86902	12	42
19	9.82816	14	9.95926	26	0.04074	9.86890	11	41
20	9.82830	14	9.95952	25	0.04048	9.86879	12	40
		14		25			12	
21	9.82844	14	9.95977	25	0.04023	9.86867	12	39
22	9.82858	14	9.96002	26	0.03998	9.86855	11	38
23	9.82872	13	9.96028	25	0.03972	9.86844	11	37
		14		25			12	
24	9.82885	14	9.96053	25	0.03947	9.86832	11	36
25	9.82899	14	9.96078	26	0.03922	9.86821	11	35
26	9.82913	14	9.96104	25	0.03896	9.86809	12	34
		14		25			11	
27	9.82927	14	9.96129	26	0.03871	9.86798	12	33
28	9.82941	14	9.96155	25	0.03845	9.86786	12	32
29	9.82955	14	9.96180	25	0.03820	9.86775	12	31
30	9.82968	13	9.96205	25	0.03795	9.86763	12	30
		14		25			12	
	Cos. 47		Cot. 47		Tang. 47	Sin. 47		

'	Sin. 42	Dif.	Tang. 42	D. c.	Cot. 42	Cos. 42	Dif.	'
30	9.82968		9.96205		0.03795	9.86763		30
31	9.82982	14	9.96231	26	0.03769	9.86752	11	29
32	9.82996	14	9.96256	25	0.03744	9.86740	12	28
		14		25			12	
33	9.83010	13	9.96281	26	0.03719	9.86728	11	27
34	9.83023	14	9.96307	25	0.03693	9.86717	12	26
35	9.83037	14	9.96332	25	0.03668	9.86705	11	25
		14		25			11	
36	9.83051	14	9.96357	26	0.03643	9.86694	12	24
37	9.83065	13	9.96383	25	0.03617	9.86682	12	23
38	9.83078	14	9.96408	25	0.03592	9.86670	11	22
		14		25			11	
39	9.83092	14	9.96433	26	0.03567	9.86659	12	21
40	9.83106	14	9.96459	25	0.03541	9.86647	12	20
41	9.83120	13	9.96484	26	0.03516	9.86635	11	19
		14		25			11	
42	9.83133	14	9.96510	25	0.03490	9.86624	12	18
43	9.83147	14	9.96535	25	0.03465	9.86612	12	17
44	9.83161	13	9.96560	26	0.03440	9.86600	11	16
		14		25			11	
45	9.83174	14	9.96586	25	0.03414	9.86589	12	15
46	9.83188	14	9.96611	25	0.03389	9.86577	12	14
47	9.83202	13	9.96636	26	0.03364	9.86565	11	13
		14		25			11	
48	9.83215	14	9.96662	25	0.03338	9.86554	12	12
49	9.83229	13	9.96687	25	0.03313	9.86542	12	11
50	9.83242	14	9.96712	26	0.03288	9.86530	12	10
		14		25			12	
51	9.83256	14	9.96738	25	0.03262	9.86518	11	9
52	9.83270	13	9.96763	25	0.03237	9.86507	12	8
53	9.83283	14	9.96788	26	0.03212	9.86495	12	7
		13		25			12	
54	9.83297	13	9.96814	25	0.03186	9.86483	11	6
55	9.83310	14	9.96839	25	0.03161	9.86472	12	5
56	9.83324	14	9.96864	26	0.03136	9.86460	12	4
		13		25			12	
57	9.83338	13	9.96890	25	0.03110	9.86448	12	3
58	9.83351	14	9.96915	25	0.03085	9.86436	11	2
59	9.83365	15	9.96940	26	0.03060	9.86425	12	1
60	9.83378		9.96966		0.03034	9.86413		0
	Cos. 47		Cot. 47		Tang. 47	Sin. 47		



'	Sin. 43	Dif.	Tang. 43	D.c.	Cot. 43	Cos. 43	Dif.	'
0	9.83578		9.96966		0.03034	9.86415		60
1	9.83592	14	9.96991	25	0.03009	9.86401	12	59
2	9.83405	13	9.97016	25	0.02984	9.86389	12	58
		14		26			12	
3	9.83419	13	9.97042	25	0.02958	9.86377	11	57
4	9.83432	14	9.97067	25	0.02933	9.86366	12	56
5	9.83446	13	9.97092	26	0.02908	9.86354	12	55
		14		25			12	
6	9.83459	14	9.97118	25	0.02882	9.86342	12	54
7	9.83473	13	9.97143	25	0.02857	9.86330	12	53
8	9.83486	14	9.97168	25	0.02832	9.86318	12	52
		14		25			12	
9	9.83500	13	9.97193	26	0.02807	9.86306	11	51
10	9.83513	14	9.97219	25	0.02781	9.86295	12	50
11	9.83527	13	9.97244	25	0.02756	9.86283	12	49
		14		26			12	
12	9.83540	14	9.97269	26	0.02731	9.86271	12	48
13	9.83554	13	9.97293	25	0.02705	9.86259	12	47
14	9.83567	14	9.97320	25	0.02680	9.86247	12	46
		14		25			12	
15	9.83581	13	9.97345	26	0.02655	9.86235	12	45
16	9.83594	14	9.97371	25	0.02629	9.86223	12	44
17	9.83608	13	9.97396	25	0.02604	9.86211	11	43
		13		25			11	
18	9.83621	13	9.97421	26	0.02579	9.86200	12	42
19	9.83634	14	9.97447	25	0.02553	9.86188	12	41
20	9.83648	13	9.97472	25	0.02528	9.86176	12	40
		13		25			12	
21	9.83661	13	9.97497	26	0.02503	9.86164	12	39
22	9.83674	14	9.97523	25	0.02477	9.86152	12	38
23	9.83688	13	9.97548	25	0.02452	9.86140	12	37
		13		25			12	
24	9.83701	14	9.97573	25	0.02427	9.86128	12	36
25	9.83715	13	9.97598	26	0.02402	9.86116	12	35
26	9.83728	13	9.97624	25	0.02376	9.86104	12	34
		13		25			12	
27	9.83741	14	9.97649	25	0.02351	9.86092	12	33
28	9.83755	13	9.97674	26	0.02326	9.86080	12	32
29	9.83768	13	9.97700	25	0.02300	9.86068	12	31
30	9.83781	13	9.97725	25	0.02275	9.86056	12	30
	Cos. 46		Cot. 46		Tang. 46	Sin. 46		

	Sin. 43	Dif.	Tang. 43	D. c.	Cot. 43	Cos. 43	Dif.	
30	9.83781	14	9.97725	25	0.02275	9.86056	12	36
31	9.83795	13	9.97750	26	0.02250	9.86044	12	29
32	9.83808	15	9.97776	25	0.02224	9.86032	12	28
33	9.83821	13	9.97801	25	0.02199	9.86020	12	27
34	9.83834	14	9.97826	25	0.02174	9.86008	12	26
35	9.83848	13	9.97851	26	0.02149	9.85996	12	25
36	9.83861	13	9.97877	25	0.02123	9.85984	12	24
37	9.83874	13	9.97902	25	0.02098	9.85972	12	23
38	9.83887	14	9.97927	26	0.02073	9.85960	12	22
39	9.83901	13	9.97953	25	0.02047	9.85948	12	21
40	9.83914	13	9.97978	25	0.02022	9.85936	12	20
41	9.83927	15	9.98003	26	0.01997	9.85924	12	19
42	9.83940	14	9.98029	25	0.01971	9.85912	12	18
43	9.83954	13	9.98054	25	0.01946	9.85900	12	17
44	9.83967	13	9.98079	25	0.01921	9.85888	12	16
45	9.83980	13	9.98104	26	0.01896	9.85876	12	15
46	9.83993	13	9.98130	25	0.01870	9.85864	13	14
47	9.84006	14	9.98155	25	0.01845	9.85851	12	13
48	9.84020	13	9.98180	26	0.01820	9.85839	12	12
49	9.84033	13	9.98206	25	0.01794	9.85827	12	11
50	9.84046	13	9.98231	25	0.01769	9.85815	12	10
51	9.84059	13	9.98256	25	0.01744	9.85803	12	9
52	9.84072	13	9.98281	26	0.01719	9.85791	12	8
53	9.84085	13	9.98307	25	0.01693	9.85779	13	7
54	9.84098	14	9.98332	25	0.01668	9.85766	12	6
55	9.84112	13	9.98357	26	0.01643	9.85754	12	5
56	9.84125	13	9.98383	25	0.01617	9.85742	12	4
57	9.84138	13	9.98408	25	0.01592	9.85730	12	3
58	9.84151	13	9.98433	25	0.01567	9.85718	12	2
59	9.84164	13	9.98458	26	0.01542	9.85706	12	1
60	9.84177		9.98484		0.01516	9.85693	15	0
	Cos. 46		Cot. 46		Tang. 46	Sin. 46		

'	Sin. 44	Dif.	Tang. 44	D. c.	Cot. 44	Cos. 44	Dif.	'
0	9.84177		9.98484		0.01516	9.85693		60
1	9.84190	13	9.98509	25	0.01491	9.85681	12	59
2	9.84203	13	9.98534	25	0.01466	9.85669	12	58
		15		26			12	
3	9.84216	13	9.98560	25	0.01440	9.85657	12	57
4	9.84229	13	9.98585	25	0.01415	9.85645	12	56
5	9.84242	13	9.98610	25	0.01390	9.85632	13	55
		13		25			12	
6	9.84255	14	9.98635	26	0.01365	9.85620	12	54
7	9.84269	13	9.98661	25	0.01339	9.85608	12	53
8	9.84282	13	9.98686	25	0.01314	9.85596	12	52
		13		25			13	
9	9.84295	13	9.98711	26	0.01289	9.85583	12	51
10	9.84308	13	9.98737	25	0.01263	9.85571	12	50
11	9.84321	13	9.98762	25	0.01238	9.85559	12	49
		13		25			12	
12	9.84334	13	9.98787	25	0.01213	9.85547	13	48
13	9.84347	13	9.98812	26	0.01188	9.85534	12	47
14	9.84360	13	9.98838	25	0.01162	9.85522	12	46
		13		25			12	
15	9.84373	12	9.98863	25	0.01137	9.85510	13	45
16	9.84385	13	9.98888	25	0.01112	9.85497	12	44
17	9.84398	13	9.98913	25	0.01087	9.85485	12	43
		13		26			12	
18	9.84411	13	9.98939	25	0.01061	9.85473	13	42
19	9.84424	13	9.98964	25	0.01036	9.85460	12	41
20	9.84437	13	9.98989	25	0.01011	9.85448	12	40
		15		26			12	
21	9.84450	15	9.99015	25	0.00985	9.85436	13	39
22	9.84463	13	9.99040	25	0.00960	9.85423	13	38
23	9.84476	13	9.99065	25	0.00935	9.85411	12	37
		13		25			12	
24	9.84489	13	9.99090	26	0.00910	9.85399	13	36
25	9.84502	15	9.99116	25	0.00884	9.85386	13	35
26	9.84515	15	9.99141	25	0.00859	9.85374	12	34
		13		25			13	
27	9.84528	12	9.99166	25	0.00834	9.85361	13	33
28	9.84540	13	9.99191	26	0.00809	9.85349	12	32
29	9.84553	13	9.99217	25	0.00783	9.85337	12	31
30	9.84566	13	9.99242	25	0.00758	9.85324	13	30
	Cos. 45		Cot. 45		Tang. 45	Sin. 45		



	Sin. 44	Dif.	Tang. 44	D.c.	Cot. 44	Cos. 44	Dif.	
30	9.84566	13	9.99242	25	0.00758	9.85324	12	30
31	9.84579	13	9.99267	26	0.00733	9.85312	13	29
32	9.84592	13	9.99293	25	0.00707	9.85299	12	28
33	9.84605	13	9.99318	25	0.00682	9.85287	13	27
34	9.84618	12	9.99343	25	0.00657	9.85274	12	26
35	9.84630	13	9.99368	26	0.00632	9.85262	12	25
36	9.84643	13	9.99394	25	0.00606	9.85250	13	24
37	9.84656	13	9.99419	25	0.00581	9.85237	12	23
38	9.84669	13	9.99444	25	0.00556	9.85225	13	22
39	9.84682	12	9.99469	26	0.00531	9.85212	12	21
40	9.84694	13	9.99495	25	0.00505	9.85200	13	20
41	9.84707	13	9.99520	25	0.00480	9.85187	12	19
42	9.84720	13	9.99545	25	0.00455	9.85175	13	18
43	9.84733	12	9.99570	26	0.00430	9.85162	12	17
44	9.84745	13	9.99596	25	0.00404	9.85150	13	16
45	9.84758	13	9.99621	25	0.00379	9.85137	12	15
46	9.84771	13	9.99646	26	0.00354	9.85125	13	14
47	9.84784	12	9.99672	25	0.00328	9.85112	12	13
48	9.84796	13	9.99697	25	0.00303	9.85100	13	12
49	9.84809	13	9.99722	25	0.00278	9.85087	13	11
50	9.84822	13	9.99747	26	0.00253	9.85074	12	10
51	9.84835	12	9.99773	25	0.00227	9.85062	13	9
52	9.84847	13	9.99798	25	0.00202	9.85049	12	8
53	9.84860	13	9.99823	25	0.00177	9.85037	13	7
54	9.84873	12	9.99848	26	0.00152	9.85024	12	6
55	9.84885	13	9.99874	25	0.00126	9.85012	13	5
56	9.84898	13	9.99899	25	0.00101	9.84999	13	4
57	9.84911	12	9.99924	25	0.00076	9.84986	12	3
58	9.84923	13	9.99949	26	0.00051	9.84974	15	2
59	9.84936	13	9.99975	25	0.00025	9.84961	12	1
60	9.84949		0.00000	25	0.00000	9.84949		0
	Cos. 43		Cot. 45		Tang. 45	Sin. 45		





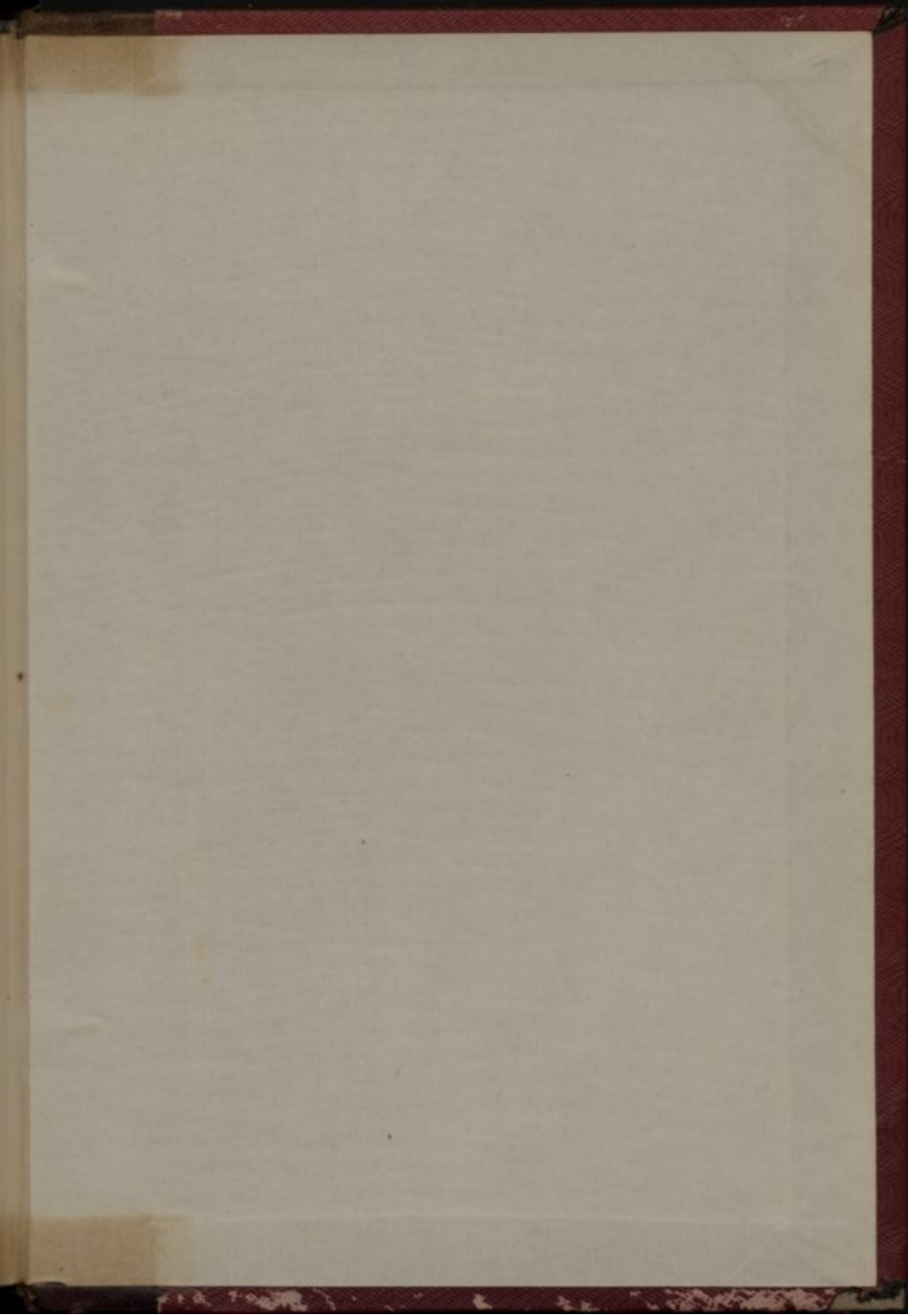


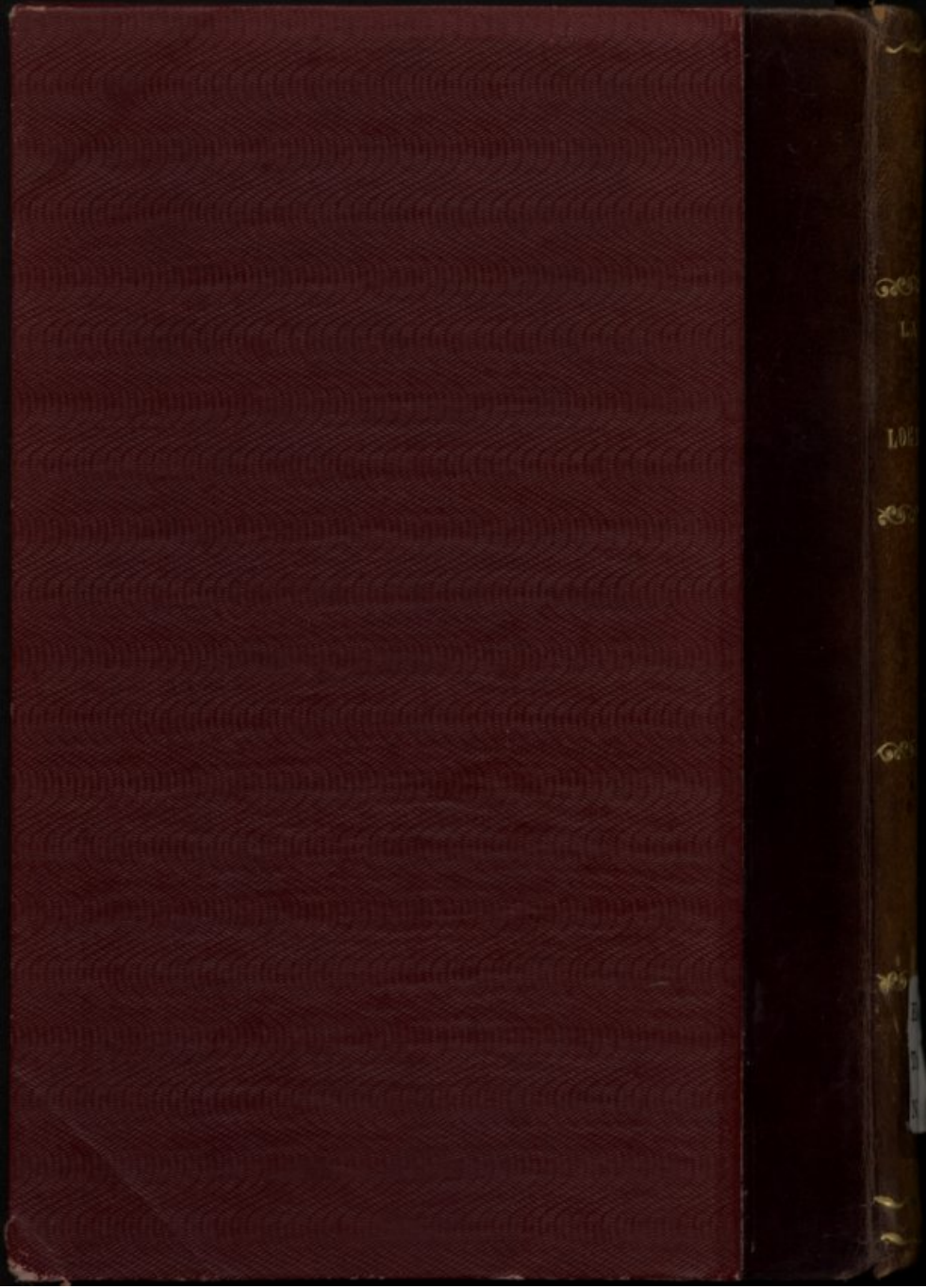












LA LANDE

LOGARITHMIQUE

Est. B. / S. R.

Tab. . . . .

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