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Liber IV. De Trigonometria elementari, sive de doctrina sinuum, tangentium, & secantium, una cum canone triangulorum, eiusque structura, & usu.

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LIBER IV.

DE

TRIGONOMETRIA ELEMENTARI,

Sive

De Doctrina Sinuum, Tangentium, & Secantium, unà cum Canone triangulorum, eiusq;
Structura, & usu.

PROŒMIUM.



Sementem hactenus fecimus, nunc messem colligemus; fundamenta posuimus, nunc superstruemus fabricam; Arithmeticae & Geometriae alas (sic eas appellat magnus Plato) Tyroni aptavimus, nunc ad sublimia Mathematica per gradus deducemus. Initium sumimus à Trigonometria, quoniam ea præ cæteris & antecedentium cognitionem, usumque deposcit, & subsequenter ferè omnibus facem præfert, cum vix quidquam in Geometria practica, in Astronomia, in Gnomonica, in Geographia, in Architectonica militari, aliisque Mathematicis occurrat Disciplinis, cui Trigonometria aut summè necessaria non sit, aut summè utilis. Hanc duplicem facimus, Elementarem, & Practicam. Illa tradit Elementa, hæc praxin, id est, methodum, quâ, ope certarum tabularum, aureæq; proportionis Regule beneficio, ex triangulorum angulis latera, vel ex lateribus angulos, vel mixtim hos ex illis dignoscimus, modo infra explicando; idq; tam in triangulis planis, quàm Sphæricis. Itaque Trigonometria Practica non docet triangulorum aream seu capacitatem invenire; hoc enim ad Geometriam practicam, de qua sequenti libro sexto, spectat. Ad inveniendam autem ex angulis latera, & ex lateribus angulos, præstantissimi Mathematici jam olim construxerunt Tabulam, quam Sinuum vocarunt: cui alii postea addiderunt alias duas, Tangentium, & Secantium appellatas. Has tabulas appellant alii Canonem Mathematicum, alii Canonem magnum, alii The-saurum Mathematicum, alii aliter, ob eximiam earum præstantiam: nos Canonem triangulorum vocamus, quoniam in horum dimensione præcipuus ac ferè unicus

Trigonometria Elementaris.

Canon triangulorum.

illarum est usus. Hoc libro trademus primò harum tabularum dispositionem, unà cum ipsis tabulis; deinde structuram, seu modum eas calculandi; tandem earundem tabularum usum. Priùs tamen terminos quosdam in Doctrina Sinuum, Tangentium, & Secantium (sic enim vocari etiam solet Elementaris Trigonometria) usitatos explicabimus. Atq; hæc omnia Trigonometriæ Elementaris nomine complectimur. Sequenti libro trademus praxin tam in planis, quàm sphericis triangulis; quem ob id Trigonometriæ Practicæ titulo cohonestamus.

CAPUT I.

De Definitionibus, seu terminis in Trigonometria Elementari usitatis.

Recolenda sunt quæ docuimus lib. 1. cap. 3. art. 2. 3. & 4. de angulis, eorumque mensura; de triangulis, circulo, diametro, semidiametro, semicirculo, arcu, quadrante, segmento circuli, & similibus; item de divisione circuli in gradus & minuta. Præter quæ explicandæ sunt sequentes Definitiones.

Arcus circuli in Trigonometria quid sit.

Sed ante omnia Notandum est primò, tamen si arcus circuli vocetur quælibet pars circuli, sive maior sit, sive minor semicirculo, in præsentem negotio de sinibus, tangentibus, & secantibus, nomine arcus intelligi solum segmentum peripheriæ circuli minus semicirculo, quale est in appposita figura segmentum AD, vel DC, vel BC, quæ sunt quadrantes; item segmenta AF, vel BF, quæ sunt quadrante minor; item segmenta FBC, BCN, quæ sunt quadrante majora.

Vide Fig. 240. Icon. C.

Complementum arcus circuli in Trigonometria.

Notandum est secundo, Differentiam huiusmodi arcuum, qua differunt à quadrante vel per defectum, vel per excessum, vocari Complementum. Sic arcus FB, est complementum arcus AF, quadrante minoris, quia est differentia per defectum inter quadrantem AB, & dictum arcum AF; & vicissim arcus FA, est complementum arcus BF, quia est differentia per defectum inter quadrantem BA, & dictum arcum BF. Similiter idem arcus FB, est complementum arcus FBC, quadrante majoris, quia est differentia per excessum inter quadrantem BC, & dictum arcum FBC. Eodem modo arcus FA, est complementum arcus FAD, quadrante maioris, quia est differentia per excessum inter quadrantem AD, & dictum arcum FAD. Vide patet, duos arcus constituentes semicirculum, quales sunt AF, & FBC, habere idem complementum FB, commune. Sic etiam duo arcus BF, & FAD, semicirculum constituentes, habent idem complementum FA, commune.

Angulus eius complementum in trigonometria quid sit.

Notandum est tertio, quod dictum fuit de arcu, & complemento arcus, intelligendum etiam esse de angulo, & complemento anguli; nam arcus sunt angulorum mensuræ, ut explicatum fuit lib. 1. cap. 3. art. 3. num. 17. & 18. Cum igitur angulus acutus sit minor recto (qui est 90. graduum) obtusus verò maior; com-

plementum anguli acuti est defectus suæ mensuræ ad rectum, hoc est, ad quadrantem circuli, seu 90. gradus; sive est differentia per defectum inter ipsum angulum acutum, & 90. gradus. Complementum verò obtusi anguli est mensuræ suæ excessus supra rectum, seu est defectus per excessum inter ipsum angulum obtusum, & 90. gradus. Sic in eodem schemate, anguli acuti AEF, complementum est angulus FEB; & anguli obtusi FEC, complementum est idem angulus FEB. Ex quo etiam patet, duos angulos constituentes semicirculum, seu gradus 180. quales sunt AEF, FEC, habere idem complementum FEB, commune.

Fig. 240. Icon. C.

Notandum est quarto, quæcunque dicemus in sequentibus de sinibus, tangentibus, & secantibus respectu arcuum, intelligenda etiam esse de iisdem respectu angulorum quos arcus subtendunt, ut melius ex dicendis patebit. His notatis, sequuntur

Definitiones sinuum.

I.

Sinus generatim est portio chordæ alicuius arcus. Explicatio patebit ex dicendis. Est autem Chorda cujusvis arcus, linea recta ipsum arcum subtendens. Talis est recta MN, & quæcunque alia circulo inscripta ita, & eius extrema tangent peripheriam circuli. Tales etiam essent FO, FP, si FH & FG essent productæ usque ad O & P. Chordam alii vocant Subtensam, quia subtendit arcum circuli, sicuti nervus subtendit arcum sagittarii. Alii etiam Inscriptam appellant, quia circulo inscribitur ita, ut eius extrema sint in peripheria circuli, ut explicatum fuit. Hinc patet primò, chordam MN esse chordam tam arcus MCN, quàm arcus MBADN. Et eadem est ratio de omnibus aliis chordis; sunt enim chordæ utriusque segmenti in quæ circulum dividunt. Patet secundo, diametrum circuli cuiuscunque, ut hic diametrum BD, vel AC &c. esse chordam, & quidem omnium maximam earum quæ circulo inscribi possunt.

Fig. 240. Icon. C.

Simus quid sit. Chorda arcus quid sit. Subtensam quid sit.

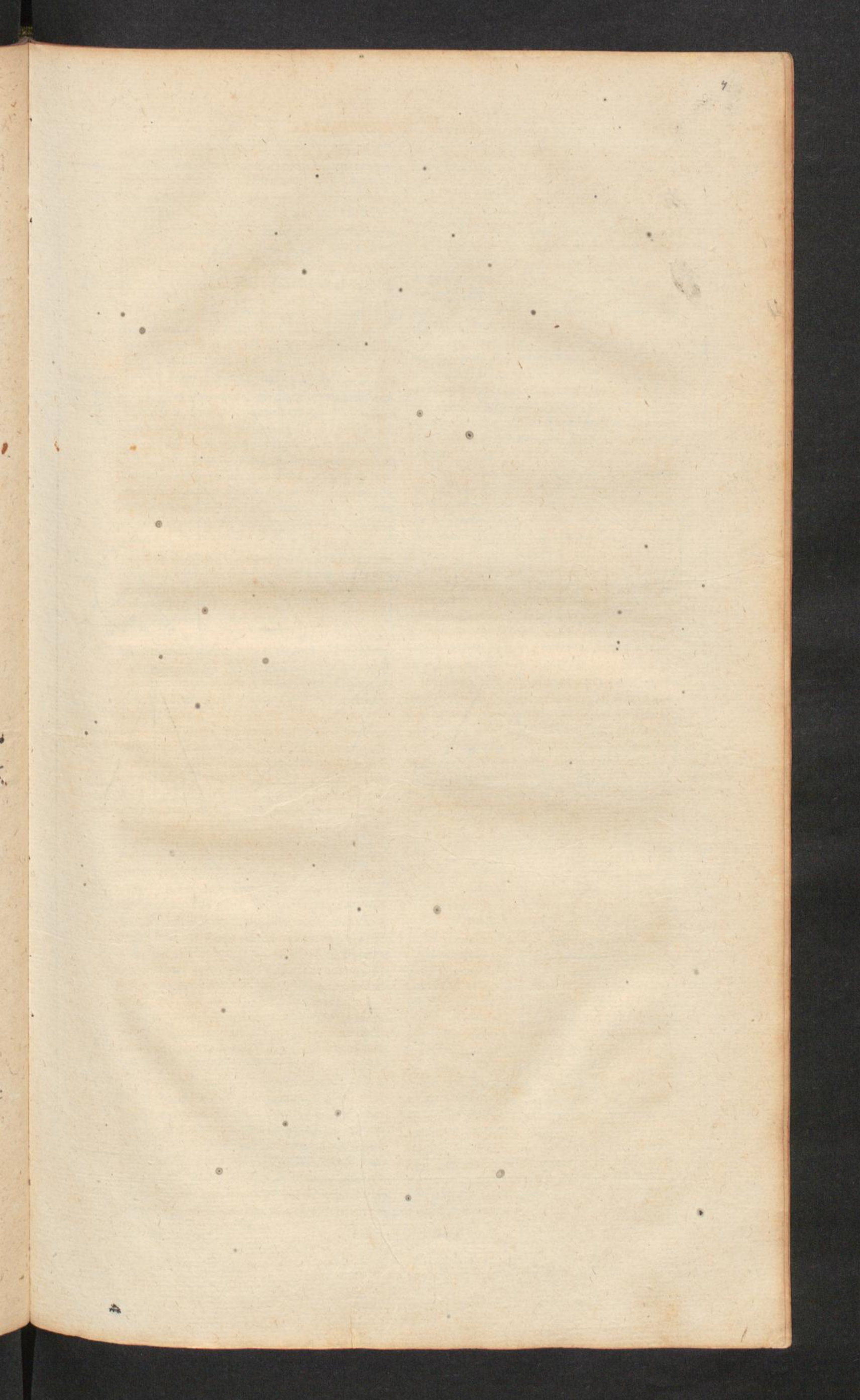
Sinus dividitur in Rectum, & Versum. Rectus in Sinum totum, Sinum arcus, & Sinum complementi arcus.

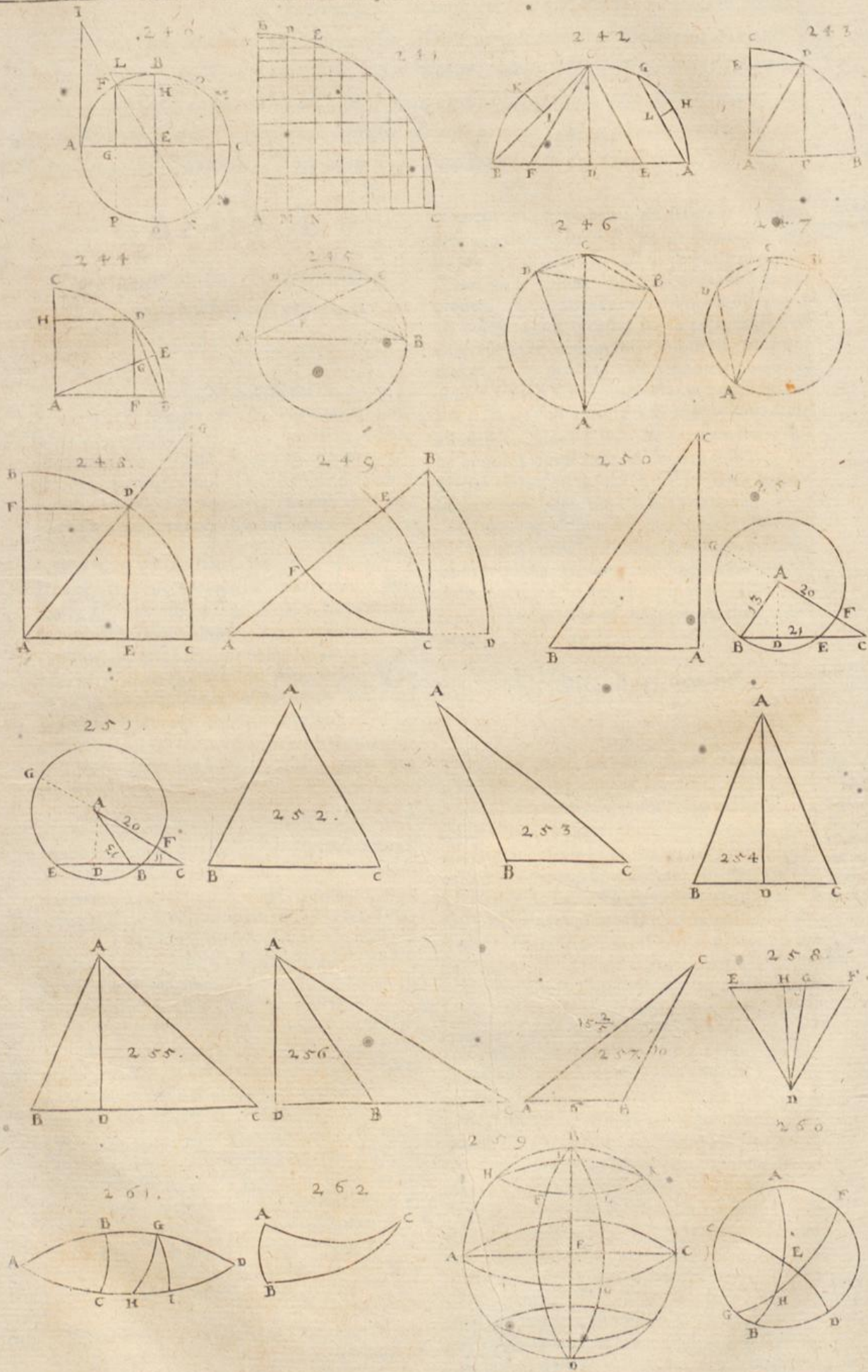
II. Sinus totus est semidiameter circuli. Talis est semidiameter EA, EB, EC, ED, EF &c. Hunc alii appellant Radium, & est sinus utriusque quadrantis quem subtendit; v. g. EA est sinus totus tam quadrantis AB, quàm quadrantis AD. itaque dici potest sinus quadrantis, seu arcus 90. graduum.

Simus totus, seu Radius.

III. Sinus rectus alicuius arcus, (sive maioris, sive minoris semicirculo) est linea perpendicularis cadens

Simus rectus, seu arcus.





dens ab una extremitate arcus, cuius dicitur sinus re-
ctus, in diametrum circuli ab altera extremitate ejus-
dem arcus ductam. Ut recta FG est sinus re-
ctus tam arcus AF, quam arcus FBC: & recta
FH, est sinus rectus arcus FB, & arcus FAD.

Hinc constat primo, duos arcus complentes
semicirculum, quales sunt AF, FBC, habere
communem sinum rectum FG. Sic etiam duo
arcus BF, FAD, habent communem sinum re-
ctum FH.

Constat secundo, semidiametrum circuli, sive
sinum totum, v.g. EB, esse sinum rectum to-
tum tam quadrantis AB, quam quadrantis CB,
ut in Definit. 2. diximus.

IV. Sinus rectus complementi alicujus arcus, est
sinus rectus illius arcus, qui dicitur complementum.
Unde si arcus FB sit complementum arcus AF;
sinus complementi arcus AF, est recta FH: ea-
demque FH est etiam sinus complementi arcus
FBC, quia idem arcus FB est complementum
tam arcus AF, quam arcus FBC, ut dixi in No-
tabili 2. Quadrans autem non habet sinum com-
plementi, quia non habet arcum complementi,
nam complementum dicitur respectu quadran-
tis,

Ex dictis constat, omnem sinum rectum, tam
totum, quam non totum, esse dimidium alicuius
chordæ; unde alii definiunt sinum rectum,
aiunt esse Dimidium chordæ dupli arcus, cuius dicitur
sinus, ut dicitur Annotat. 5.

Præter sinus rectos hætenus explicatos, con-
siderant Mathematici in circulo etiam sinum
versum, tam respectu arcuum, quam complemen-
torum: estque triplex, Minor sinu toto, maior
sinu toto, & æqualis sinui toti. Sic autem de-
finiunt illos.

V. Sinus versus alicujus arcus, est segmentum dia-
metri inter sinum rectum, & alteram extremitatem
arcus interceptum. Sinus ergo versus arcus AF,
est recta AG minor sinu toto; & sinus versus
arcus FBC, est recta GC maior sinu toto; quia
perpendicularis FG est sinus rectus tam arcus
AF, quam arcus FBC. Semidiameter EB est
sinus versus tam quadrantis AB, quam CB, si
EA & EC sunt eorum sinus recti; estque æ-
qualis sinui toti.

VI. Sinus versus complementi alicujus arcus, est
sinus versus illius arcus, qui dicitur complementum.
Sic si arcus FB est complementum arcus FA;
recta BH est sinus versus complementi arcus
AF, quia est sinus versus arcus FB, qui est com-
plementum arcus AF. Est etiam sinus versus
complementi arcus FBC, propter eandem cau-
sam.

Hinc patet primo, duos arcus complentes se-
micirculum, habere eundem sinum versus comple-
menti, quia habent eundem arcum comple-
menti; Ut recta BH est sinus versus comple-
menti tam arcus AF, quam arcus FBC, ut
diximus. Et hic est minor sinu toto.

Patet secundo, eosdem duos arcus complen-
tes semicirculum habere sinum versus arcuum
differentes; & sinum versus arcus minoris qua-
drante, esse minorem sinu toto, seu semidiametro;
sinum autem versus arcus quadrante maio-
ris, esse sinu toto maiorem; & sinus versus
utriusque arcus simul sumptos æquari toti dia-

metro, ut sunt AG, & GC, respectu arcuum
AF, & FBC.

Annotationes.

I. Ex dictis hætenus constat, id quod diximus
Definit. I. nimirum, omnem sinum esse por-
tionem rectæ subtendentis arcum circuli, hoc est,
portionem chordæ, sive sit sinus rectus, sive versus;
sive totus, sive non totus. Constat præterea, om-
nem sinum versus esse portionem diametri inter
arcum & sinum rectum.

II. Sinus versus ita appellatur, quia verso seu
inverso modo disponitur in circulo respectu sinus
recti. Appellatur etiam ab aliquibus Sagitta,
quia in modum sagittæ positus est inter arcum &
chordam. Vterque porro sinus, tam rectus, quam
versus, appellatur ideo sinus, quia unâ cum ar-
cu constituit formam sinus seu portus maritimi
clausi.

III. Quando Scriptores de sinu aliquo loquun-
tur, & non appellant expresse sinum totum, aut
complementi, aut versus; semper intelliguntur
de sinu recto arcus alicujus quadrante minoris
aut majoris, qui non sit complementum alterius
arcus.

IV. Quilibet sinus dicitur sinus tot graduum,
aut minorum, quot gradus aut minuta continet
arcus ille, cuius est sinus: ut si arcus alicujus sinus
continet gradus 30, 40 &c. aut gradus 25, minuta
16 &c. aut minuta 30, 45 &c. etiam sinus talis
arcus dicitur sinus graduum 30, 40 &c. aut gra-
duum 25, minorum 6 &c.

V. Sinus recti à plerisque Scriptoribus appel-
lantur semisses rectarum in circulo subtensarum,
seu dimidia chordarum, ut supra notavimus,
quia omnis sinus rectus est dimidium chordæ sub-
tendentis duplum ejus arcus, cuius dicitur sinus
rectus; ut patet in figura, si sinus rectus FG arcus
AF, producaturs usque ad P; & sinus FH, com-
plementi FB, producaturs usque ad O; & sinus
rectus AE quadrantis AB, producaturs usque
ad C.

VI. Quandoquidem si ex centro circuli, ad
illam extremitatem arcus subtensi à sinu recto
quocunque, per quam non transit semidiameter,
ducatur alia semidiameter, constituitur angulus
rectilineus in centro (ut patet in figura, si ex cen-
tro E, ad extremitatem F arcus BF, aut AF, du-
catur semidiameter EF; constituitur enim angu-
lus FEB, & angulus FE A) & prædicti sinus recti
arcus opponitur illi angulo qui in centro fit; ideo
talis sinus rectus vocatur etiam sinus anguli illius
qui fit in centro. Sic sinus FH, est sinus anguli
FEB; & sinus FG, est sinus anguli FE A. Quid-
quid ergo diximus de sinibus rectis respectu arcuum,
intelligi etiam debet (ut supra quoque monui-
mus) de sinibus angulorum, quod nimirum alius
sit sinus rectus anguli, alius complementi anguli:
item quod alius sit sinus rectus anguli tot graduum,
aut minorum, alius sinus rectus anguli aliorum
graduum aut minorum. Hinc sinus totus,
est sinus anguli 90. graduum, quia est sinus arcus
90. graduum, seu quadrantis. Hinc præterea
duo anguli comprehendentes simul gradus 180, sive
semicirculum, quales sunt anguli AEF, & CEF,
habent eundem sinum rectum FG; ac proinde si-

Sinus om-
nis est
portio rectæ
subtenden-
tis arcum.

Sinus versus
etymon.

Sinus re-
ctus est di-
midium
chordæ.

Fig. 240.
Icon. C.

Sinus dici-
tur etiam
respectu
anguli.

Sinus ver-
sus com-
plementi.

Sinus est
dimidium
chordæ.

Fig. 240.
Icon. C.
Sinus ver-
sus arcus.

Sinus ver-
sus comple-
menti ar-
cus.

nus anguli maioris recto, est sinus anguli illius, qui est complementum ad duos rectos, ut in exemplo posito sinus anguli CE est sinus anguli AEF . Atq; hoc bene notandum est, quia in sequentibus saepe occurret.

Definitiones tangentium & secantium.

PRæter sinus arcuum & angulorum hætenus explicatos, considerant Mathematici alias lineas rectas circulo inscriptas, aut adscriptas, quas vocant tangentes, & secantes arcuum, & angulorum; quarum definitiones sequuntur.

Tangens
arcus.

Fig. 240.
Icon, C.

VII. Tangens alicuius arcus, est portio linea recta, qua arcum illum tangit in una extremitate, & intercipitur inter punctum contactus & diametrum productam per alteram eiusdem arcus extremitatem usq; ad tangentem. Ita linea AI , est tangens arcus AF , quia AI tangit arcum AF in extremitate A , diameter KEF transit per alterum extremum F , protractaque occurrit tangenti AI in puncto I . Eadem recta AI est etiam tangens anguli AEF , qui subtenditur ab arcu AF . Eadem præterea AI est tangens arcus AK , qui cum AF complet semicirculum, quia recta AI tangit etiam arcum AK in termino A , & diameter FEK transit per alterum terminum K , protractaque occurrit ipsi AI .

Tangens
complementi
arcus.

VIII. Tangens complementi alicuius arcus, est tangens illius arcus, qui dicitur complementum. Ut recta BL est tangens complementi arcus AF , & arcus CF , quia est tangens arcus FB , qui est complementum arcus AF , & arcus CF . Eadem recta BL , est etiam tangens anguli FEB , qui est complementum anguli AEF .

IX. Secans alicuius arcus est segmentum semidiametri producta per unam extremitatem illius arcus usq; ad tangentem, interceptum inter centrum & tangentem. Sic recta EI est secans tam arcus AF , quam arcus AK . Eadem recta EI est secans anguli AEF .

X. Secans complementi alicuius arcus, est secans illius arcus, qui dicitur complementum. Sic recta EL est secans complementi arcus AF , quia est secans arcus FB , qui est complementum arcus AF . Eadem recta EL est secans complementi anguli AEF , quia est secans anguli FEB , qui est complementum prioris.

Annotationes.

I. **L**inea tangens dicitur ab aliquibus Prosinus, & ab aliis Adscripta. Secans verò dicitur Hypothenusa, & Transinuosa. Ratio denominationis colligitur ex positione illarum respectu arcuum, & sinuum, & patet ex schemate supra posito.

II. Tangens alicuius arcus est semper parallela sinui eiusdem arcus, quia ut sinus, ita & tangens est perpendicularis ad semidiametrum transeuntem per punctum contactus, ille quidem per definit. 3. huius capituli, hæc verò per 18. tertii Euclidis.

CAPUT II.

De ordine ac dispositione tabularum Sinuum, Tangentium, & Secantium.

ANtequam structuram, seu modum conficiendi tabulas sinuum, tangentium, & secantium doceam, illas ob oculos legentium ponere placet, illarumque ordinem ac dispositionem explicare. Ut verò melius intelligatur à Tyronibus, unde originem sumpserint tabulæ sinuum, & cur aliqui sinus sint maiores, alii verò minores;

Notandum est Primo, Omnes sinus rectos, tam arcuum, quam complementorum, intra circuli quadrantem descriptos, esse minores sinu toto, ut ex dictis colligitur, & probari potest ex 34. pri. Euclid. patetque ex apposito schemate, in quo AB est sinus totus, MD sinus graduum v. g. 80: est autem MD æqualis ipsi AY , per dictam 34. pri. & AY minor quam AB , per conversum Axiomatis 9. pri. Euclid; ergo. Et eadem est ratio de omnibus aliis. Hinc fit, ut si sinus totus dividatur in quotlibet partes æquales, & quilibet sinus non totus dividatur eadem divisione, ita ut particule sinus totius & sinuum non totorum æquales sint; fit inquam ut sinus quilibet non totus contineat pauciores tales particulas, quam sinus totus; & tantò pauciores, quò magis à sinu toto remotus est, seu quò minoris arcus est sinus. Sic MD pauciores particulas continet quam AB , & NE adhuc pauciores, & longè pauciores OF , PG &c. Idem dicendum est de sinibus complementorum comparatis cum sinu toto AC .

Sinus recti
minores
sunt sinu
toto.

Notandum est Secundo, Recentiores Mathematicos qui sinuum tabulas construxerunt, divisisse sinum totum in æquales particulas 100000, aut 1000000, aut 10000000 (antiqui aliter dividebant) & subtilissimo ratiocinio, summoque labore inquisivisse, quot particulas ex 100000, aut 1000000, aut 10000000 competant singulis sinibus singulorum graduum ac minorum, totius quadrantis. Eadem ratione inquisiverunt ac reppererunt, quot particule ex dictis competant tangentibus, & secantibus omnium graduum ac minorum totius quadrantis: nam omnes tangentes ac secantes habent certam ac determinatam proportionem ad sinum totum, ut ex infrà dicendis patebit. Numerum particularum singulis sinibus, tangentibus, & secantibus debitarum, distribuerunt in tres tabulas, easque appellarunt tabulas sinuum, tangentium, & secantium. His præmissis, sequitur

Tabula sinuum, tangentium, & secantium quomodo constructa fuerint.

Ordo ac dispositio sequentium tabularum.

SEquentes tabulæ sunt compositæ juxta radium seu sinum totum divisum in partes 1000000, ut eò sint accuratiores, inserviantq; non tantum pro Geometricis (pro quibus sufficiunt tabulæ constructæ juxta radium 100000, aut etiam pauciorum partium,) sed etiam pro

Tabularum earundem ordo, ac dispositio.

Astro-

Astronomicis, in quibus scrupulosius est procedendum. Exhibent sinus, tangentes, & secantes pro omnibus gradibus, & minutis primis totius quadrantis. Ordo ac dispositio est quam vides, & quam mox explicabo: quamvis enim aliis alia placeat, hæc tamen omnium optima videtur, & nunc communiter usurpatur, & ita se habet.

I. Singulæ paginæ continent octo columnas numeris refertas; quarum prima ad sinistram continet in capite numerum graduum quadrantis à gradu 0 usque ad 44; quibus subjiciuntur, descendendo, minuta prima eorundem graduum, à minuto 0 usque ad 60: octava verò columna ad dexteram continet in calce seu parte inferiore, ordine retrogrado, numerum reliquorum graduum quadrantis, à 45 usque ad 89; quibus superponuntur, ascendendo, minuta prima eorundem graduum à minuto 0 usque ad 60. Itaque gradus & minuta columnæ octavæ, sunt complementa graduum & minorum columnæ primæ.

II. Reliquæ sex columnæ singularum paginarum continent sinus, tangentes, & secantes, prout tituli supra scripti indicant. Harum tres sinistimæ spectant ad primam columnam, reliquæ tres dextimæ ad octavam. Omnes ita dispositæ sunt, ut è regione omnium graduum & minorum progrediendo in transversum sub titulis sinuum, tangentium, & secantium, notatæ sint partes eorundem sinuum, tangentium, & secantium, in partibus sinus totius 10000000. Itaque sinus, tangentes, & secantes trium dextimarum, sunt complementa sinuum, tangentium, & secantium, trium sinistimarum tabularum, & vice versâ.

III. Sicuti sinus in quadrante crescunt con-

tinuò ab initio primi gradus & minuti usque ad ultimum, uti ex Notabili primo huius capituli colligitur; ita & numeri in tabula sinuum. Tangentium similiter numeri continuò crescunt ab initio quadrantis usque ad finem; ubi infinita est ea quæ respondet gradui nonagesimo. Et citra quidem ipsius quadrantis dimidium sunt minores sinu toto, ultra verò sunt maiores. At secantes uniuscuiusque gradus excedunt semper integrum sinum, crescuntque semper usque ad finem quadrantis; ubi similiter infinita est ea quæ ultimo ultimi gradus minuto respondet.

IV. Non exhibentur seorsim tabulæ sinuum versorum, quia parvo labore eruuntur ex tabula sinuum rectorum, ut dicitur in capite quarto Proposit. 3. & 4. Nulli etiam sinus semicirculi, & arcuum semicirculo maiorum continentur in his tabulis, quia nulli dantur. Quæ verò ratione sinus, tangentes, & secantes arcuum quadrante maiorum ex iisdem tabulis erui queant, dicemus ibidem Proposit. 2.

V. In iisdem tabulis duæ ultimæ notæ ad dexteram omnium sinuum, tangentium, & secantium discretæ sunt ab aliis antecedentibus puncto interposito, quia præcedentes numeri usque ad punctum exhibent sinus, tangentes, & secantes respondententes radio seu sinui toti partium 1000000. Quod ideo fecimus, ut si quis talem sinum totum adhibere velit ad faciliorem operationem, id sine difficultate facere queat, omitendo solum ultimas duas notas post punctum; servatâ tamen hac cautelâ, ut si duo numeri abscissi superant 50, augeatur præcedens ultima figura proximè post punctum unâ unitate, propter causam sequenti capite 4. explicandam. Nunc

Sequuntur Tabule

*Sinuum, Tangentium, & Secantium, in partibus sinus totius
10000000 partium.*

Gradus & Minuta	Sinus	Tangentium	Secantium
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
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O	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	00. 00	00. 00	000000.00	10000.00	Infinita	Infinita	60
1	29. 09	29. 09	100000.00	99999.99	343774667. 38	343774681. 93	59
2	58. 18	58. 18	100000.02	99999.98	171887319. 15	171887348. 24	58
3	87. 27	87. 27	100000.04	99999.96	114591529. 94	114591573. 57	57
4	116. 36	116. 36	100000.07	99999.93	85943630. 48	85943688. 66	56
5	145. 44	145. 44	100000.11	99999.89	68754886. 93	68754959. 66	55
6	174. 53	174. 53	100000.16	99999.84	57295721. 34	57295808. 60	54
7	203. 62	203. 62	100000.21	99999.79	49110600. 28	49110702. 09	53
8	232. 71	232. 71	100000.27	99999.73	42971757. 06	42971873. 42	52
9	261. 80	261. 80	100000.34	99999.66	38197099. 08	38197229. 98	51
10	290. 89	290. 89	100000.42	99999.58	34377370. 74	34377516. 19	50
11	319. 98	319. 98	100000.51	99999.49	31252136. 71	31252296. 70	49
12	349. 06	349. 07	100000.61	99999.39	28647773. 40	28647947. 95	48
13	378. 15	378. 16	100000.72	99999.28	26444079. 88	26444268. 95	47
14	407. 24	407. 25	100000.83	99999.17	24555198. 33	24555401. 95	46
15	436. 33	436. 33	100000.95	99999.05	22918166. 36	22918384. 53	45
16	465. 42	465. 42	100001.08	99998.92	21485762. 18	21485994. 89	44
17	494. 51	494. 51	100001.22	99998.78	20221874. 99	20222122. 25	43
18	523. 60	523. 60	100001.37	99998.63	19098418. 64	19098680. 44	42
19	552. 68	552. 69	100001.53	99998.47	18093219. 83	18093496. 17	41
20	581. 77	581. 78	100001.70	99998.30	17188539. 93	17188830. 82	40
21	610. 86	610. 87	100001.87	99998.13	16370019. 10	16370324. 53	39
22	639. 95	639. 96	100002.05	99997.95	15625908. 37	15626228. 34	38
23	669. 04	669. 05	100002.24	99997.76	14946502. 08	14946836. 60	37
24	698. 13	698. 14	100002.44	99997.56	14323712. 17	14324061. 23	36
25	727. 21	727. 23	100002.65	99997.35	13750744. 68	13751108. 29	35
26	756. 30	756. 32	100002.86	99997.13	13221850. 86	13222229. 02	34
27	785. 39	785. 41	100003.08	99996.91	12732133. 65	12732526. 35	33
28	814. 48	814. 50	100003.31	99996.68	12277395. 54	12277802. 79	32
29	843. 57	843. 60	100003.55	99996.44	11854018. 02	11854439. 81	31
30	872. 65	872. 69	100003.80	99996.19	11458865. 01	11459301. 35	30
31	901. 74	901. 78	100004.06	99995.93	11089205. 13	11089656. 01	29
32	930. 83	930. 87	100004.33	99995.66	10742648. 38	10743113. 80	28
33	959. 92	959. 96	100004.61	99995.39	10417094. 48	10417574. 45	27
34	989. 00	989. 05	100004.89	99995.11	10110690. 24	10111184. 75	26
35	1018. 09	1018. 14	100005.18	99994.82	9821794. 26	9822303. 32	25
36	1047. 18	1047. 24	100005.48	99994.52	9548947. 52	9549471. 12	24
37	1076. 27	1076. 33	100005.79	99994.21	9290848. 72	9291386. 87	23
38	1105. 35	1105. 42	100006.11	99993.89	9046333. 57	9046886. 26	22
39	1134. 44	1134. 51	100006.44	99993.56	8814357. 15	8814924. 39	21
40	1163. 53	1163. 61	100006.77	99993.23	8593979. 07	8594560. 86	20
41	1192. 61	1192. 70	100007.11	99992.89	8384350. 67	8384947. 00	19
42	1221. 70	1221. 79	100007.46	99992.54	8184704. 11	8185314. 98	18
43	1250. 79	1250. 88	100007.82	99992.18	7994342. 99	7994968. 41	17
44	1279. 87	1279. 98	100008.19	99991.81	7812634. 20	7813274. 16	16
45	1308. 96	1309. 07	100008.57	99991.43	7639000. 93	7639655. 44	15
46	1338. 05	1338. 17	100008.96	99991.04	7472916. 51	7473585. 56	14
47	1367. 13	1367. 26	100009.35	99990.65	7313899. 10	7314582. 70	13
48	1396. 22	1396. 35	100009.75	99990.25	7161507. 01	7162205. 15	12
49	1425. 30	1425. 45	100010.16	99989.84	7015334. 61	7016047. 35	11
50	1454. 39	1454. 54	100010.58	99989.42	6875008. 72	6875735. 95	10
51	1483. 48	1483. 64	100011.01	99988.99	6740185. 43	6740927. 20	9
52	1512. 56	1512. 73	100011.45	99988.55	6610547. 27	6611303. 59	8
53	1541. 65	1541. 83	100011.89	99988.11	6485800. 75	6486571. 62	7
54	1570. 73	1570. 93	100012.34	99987.66	6365674. 12	6366459. 53	6
55	1599. 82	1600. 02	100012.80	99987.20	6249915. 37	6250715. 33	5
56	1628. 90	1629. 12	100013.27	99986.73	6138290. 52	6139105. 02	4
57	1657. 99	1658. 21	100013.75	99986.25	6030581. 99	6031411. 04	3
58	1687. 07	1687. 31	100014.24	99985.76	5926587. 21	5927430. 81	2
59	1716. 16	1716. 41	100014.73	99985.27	5826117. 35	5826975. 49	1
60	1745. 24	1745. 51	100015.23	99984.77	5728996. 16	5729868. 85	0

	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	1745. 24	1745. 51	100015.23		99984.77	5728996.16	5729868.85	60
1	1774. 32	1774. 60	100015.74		99984.26	5635058.96	5635946.19	59
2	1803. 41	1803. 70	100016.26		99983.74	5544151.67	5545053.45	58
3	1832. 49	1832. 80	100016.79		99983.21	5456130.03	5457046.35	57
4	1861. 58	1861. 90	100017.33		99982.67	5370858.75	5371789.62	56
5	1890. 66	1891. 00	100017.88		99982.12	5288210.91	5289156.37	55
6	1919. 74	1920. 10	100018.43		99981.57	5208067.26	5209027.22	54
7	1948. 83	1949. 20	100018.99		99981.01	5130315.66	5131290.17	53
8	1977. 91	1978. 30	100019.56		99980.44	5054850.59	5055839.65	52
9	2006. 99	2007. 40	100020.14		99979.86	4981572.64	4982576.23	51
10	2036. 08	2036. 50	100020.73		99979.27	4910388.06	4911406.20	50
11	2065. 16	2065. 60	100021.33		99978.67	4841208.41	4842241.10	49
12	2094. 24	2094. 70	100021.94		99978.06	4773950.14	4774997.38	48
13	2123. 32	2123. 80	100022.55		99977.45	4708534.30	4709596.08	47
14	2152. 41	2152. 91	100023.17		99976.83	4644886.20	4645962.53	46
15	2181. 49	2182. 01	100023.80		99976.20	4582935.12	4584025.99	45
16	2210. 57	2211. 11	100024.44		99975.56	4522614.07	4523719.49	44
17	2239. 65	2240. 21	100025.09		99974.91	4463859.56	4464979.52	43
18	2268. 73	2269. 32	100025.75		99974.25	4406611.32	4407745.83	42
19	2297. 81	2298. 42	100026.41		99973.59	4350812.16	4351961.22	41
20	2326. 90	2327. 53	100027.08		99972.92	4296407.73	4297571.34	40
21	2355. 98	2356. 63	100027.76		99972.24	4243346.39	4244524.54	39
22	2385. 06	2385. 74	100028.45		99971.55	4191578.99	4192771.68	38
23	2414. 14	2414. 84	100029.15		99970.85	4141058.76	4142266.00	37
24	2443. 22	2443. 95	100029.86		99970.14	4091741.16	4092962.95	36
25	2472. 30	2474. 05	100030.58		99969.43	4043583.75	4044820.09	35
26	2501. 38	2502. 16	100031.30		99968.71	3996546.05	3997796.94	34
27	2530. 46	2531. 27	100032.03		99967.98	3950589.46	3951854.89	33
28	2559. 54	2560. 38	100032.77		99967.24	3905677.11	3906957.09	32
29	2588. 62	2589. 48	100033.52		99966.49	3861773.81	3863068.34	31
30	2617. 69	2618. 59	100034.28		99965.73	3818845.93	3820155.00	30
31	2646. 77	2647. 70	100035.05		99964.96	3776861.30	3778184.92	29
32	2675. 85	2676. 81	100035.82		99964.19	3735789.17	3737127.34	28
33	2704. 93	2705. 92	100036.60		99963.41	3695600.11	3696952.82	27
34	2734. 01	2735. 03	100037.39		99962.62	3656265.92	3657633.18	26
35	2763. 09	2764. 14	100038.19		99961.82	3617759.62	3619141.43	25
36	2792. 16	2793. 25	100039.00		99961.01	3580055.33	3581451.68	24
37	2821. 24	2822. 36	100039.82		99960.19	3543128.25	3544539.15	23
38	2850. 32	2851. 48	100040.65		99959.36	3506954.58	3508380.03	22
39	2879. 40	2880. 59	100041.48		99958.53	3471511.50	3472951.50	21
40	2908. 47	2909. 70	100042.32		99957.69	3436777.09	3438231.63	20
41	2937. 55	2938. 82	100043.17		99956.84	3402730.29	3404199.39	19
42	2966. 62	2967. 93	100044.03		99955.98	3369350.89	3370834.53	18
43	2995. 70	2997. 05	100044.90		99955.11	3336619.45	3338117.63	17
44	3024. 78	3026. 16	100045.78		99954.24	3304517.27	3306030.00	16
45	3053. 85	3055. 28	100046.67		99953.36	3273026.37	3274553.65	15
46	3082. 93	3084. 39	100047.56		99952.47	3242129.46	3243671.29	14
47	3112. 00	3113. 51	100048.46		99951.57	3211809.88	3213366.26	13
48	3141. 08	3142. 63	100049.37		99950.66	3182051.60	3183622.52	12
49	3170. 15	3171. 74	100050.29		99949.74	3152839.16	3154424.63	11
50	3199. 22	3200. 86	100051.22		99948.81	3124157.67	3125757.70	10
51	3228. 30	3229. 98	100052.15		99947.88	3095992.80	3097607.37	9
52	3257. 37	3259. 10	100053.09		99946.94	3068330.70	3069959.82	8
53	3286. 44	3288. 22	100054.03		99945.99	3041158.02	3042801.69	7
54	3315. 52	3317. 34	100055.01		99945.03	3014461.89	3016120.10	6
55	3344. 59	3346. 46	100055.98		99944.06	2988229.86	2989902.63	5
56	3373. 66	3375. 58	100056.96		99943.08	2962449.95	2964137.26	4
57	3402. 73	3404. 71	100057.95		99942.09	2937110.55	2938812.41	3
58	3431. 81	3433. 83	100058.94		99941.09	2912200.47	2913916.88	2
59	3460. 88	3462. 95	100059.94		99940.09	2887708.88	2889439.84	1
60	3489. 95	3492. 08	100060.95		99939.08	2863625.33	2865370.83	0

2	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	3489.95	3492.08	100060.95	99939.08	2863625.33	2865370.83	60
1	3519.02	3521.20	100061.97	99938.06	2839939.69	2841699.74	59
2	3548.09	3550.33	100063.00	99937.03	2816642.18	2818416.78	58
3	3577.16	3579.45	100064.04	99935.99	2793723.33	2795512.48	57
4	3606.23	3608.58	100065.09	99934.95	2771173.99	2772977.69	56
5	3635.30	3637.71	100066.15	99933.90	2748985.28	2750803.53	55
6	3664.37	3666.83	100067.21	99932.84	2727148.61	2728981.41	54
7	3693.44	3695.96	100068.28	99931.77	2705655.68	2707503.03	53
8	3722.51	3725.09	100069.36	99930.69	2684498.43	2686360.33	52
9	3751.58	3754.22	100070.45	99929.60	2663669.04	2665545.49	51
10	3780.65	3783.35	100071.55	99928.51	2643159.96	2645050.96	50
11	3809.71	3812.48	100072.66	99927.40	2622963.84	2624869.39	49
12	3838.78	3841.61	100073.77	99926.29	2603073.58	2604993.68	48
13	3867.85	3870.74	100074.89	99925.17	2583482.27	2585416.92	47
14	3896.91	3899.88	100076.02	99924.04	2564183.23	2566132.43	46
15	3925.98	3929.01	100077.16	99922.90	2545169.96	2547133.71	45
16	3955.05	3958.14	100078.31	99921.75	2526436.15	2528414.45	44
17	3984.11	3987.28	100079.47	99920.60	2507975.68	2509963.53	43
18	4013.18	4016.41	100080.63	99919.44	2489782.62	2491790.02	42
19	4042.24	4045.55	100081.80	99918.27	2471851.19	2473873.14	41
20	4071.31	4074.69	100082.98	99917.09	2454175.78	2456212.28	40
21	4100.37	4103.83	100084.17	99915.90	2439750.95	2438802.00	39
22	4129.44	4132.96	100085.37	99914.70	2419571.40	2421637.00	38
23	4158.50	4162.10	100086.58	99913.49	2402631.99	2404712.14	37
24	4187.57	4191.24	100087.80	99912.28	2385927.72	2388022.42	36
25	4216.63	4220.38	100089.02	99911.06	2369453.72	2371562.97	35
26	4245.69	4249.52	100090.25	99909.83	2353205.25	2355329.05	34
27	4274.75	4278.66	100091.49	99908.59	2337177.72	2339316.07	33
28	4303.82	4307.81	100092.74	99907.34	2321366.65	2323519.55	32
29	4332.88	4336.95	100094.00	99906.08	2305767.67	2307935.13	31
30	4361.94	4366.09	100095.27	99904.82	2290376.55	2292558.56	30
31	4391.00	4395.24	100096.55	99903.55	2275189.16	2277385.72	29
32	4420.06	4424.38	100097.83	99902.27	2260201.48	2262412.59	28
33	4449.12	4453.53	100099.12	99900.98	2245409.59	2247635.25	27
34	4478.18	4482.68	100100.42	99899.68	2230809.67	2233049.89	26
35	4507.24	4511.82	100101.73	99898.37	2216398.02	2218652.78	25
36	4536.30	4540.97	100103.05	99897.05	2202171.00	2204440.32	24
37	4565.36	4570.12	100104.38	99895.73	2188125.10	2190408.97	23
38	4594.42	4599.27	100105.71	99894.40	2174256.87	2176555.29	22
39	4623.47	4628.42	100107.05	99893.06	2160562.96	2162875.93	21
40	4652.53	4657.57	100108.40	99891.71	2147040.10	2149367.63	20
41	4681.59	4686.73	100109.76	99890.35	2133685.11	2136027.19	19
42	4710.64	4715.88	100111.13	99888.98	2120494.88	2122851.51	18
43	4739.70	4745.03	100112.51	99887.61	2107466.37	2109837.55	17
44	4768.76	4774.19	100113.90	99886.23	2094596.63	2096982.36	16
45	4797.81	4803.34	100115.30	99884.84	2081882.76	2084283.05	15
46	4826.87	4832.50	100116.70	99883.44	2069321.96	2071736.80	14
47	4855.92	4861.66	100118.11	99882.03	2056911.47	2059340.86	13
48	4884.98	4890.82	100119.53	99880.61	2044648.61	2047092.55	12
49	4914.03	4919.97	100120.96	99879.18	2032530.75	2034989.25	11
50	4943.08	4949.13	100122.40	99877.75	2020555.35	2023028.40	10
51	4972.14	4978.29	100123.85	99876.31	2008719.89	2011207.50	9
52	5001.19	5007.46	100125.30	99874.86	1997021.95	1999524.11	8
53	5030.24	5036.62	100126.76	99873.40	1985459.12	1987975.84	7
54	5059.29	5065.78	160128.23	99871.93	1974029.10	1976560.36	6
55	5088.35	5094.95	100129.71	99870.45	1962729.59	1965275.41	5
56	5117.40	5124.11	100131.20	99868.97	1951558.37	1954118.74	4
57	5146.45	5153.28	100132.70	99867.48	1940513.27	1943088.20	3
58	5175.50	5182.44	100134.20	99865.98	1929592.17	1932181.65	2
59	5204.55	5211.61	100135.71	99864.47	1918792.98	1921397.01	1
60	5233.60	5240.78	100137.23	99862.95	1908113.67	1910732.26	0

3	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	5233. 60	5240. 78	100137.23	99862.95	1908113.67	1910732.26	60
1	5262. 64	5269. 95	100138.76	99861.42	1897552.26	1900185.40	59
2	5291. 69	5299. 12	100140.30	99859.89	1887106.80	1889754.50	58
3	5320. 74	5328. 29	100141.85	99858.35	1876775.39	1879437.65	57
4	5349. 79	5357. 46	100143.41	99856.80	1866556.18	1869232.99	56
5	5378. 83	5386. 63	100144.98	99855.24	1856447.34	1859138.71	55
6	5407. 88	5415. 81	100146.55	99853.67	1846447.09	1849153.01	54
7	5436. 93	5444. 98	100148.13	99852.09	1836553.70	1839274.17	53
8	5465. 97	5474. 16	100149.72	99850.50	1826765.44	1829500.48	52
9	5495. 02	5503. 33	100151.32	99848.91	1817080.67	1819830.26	51
10	5524. 06	5532. 51	100152.93	99847.31	1807497.74	1810261.88	50
11	5553. 11	5561. 69	100154.55	99845.70	1798015.05	1800893.75	49
12	5585. 15	5590. 87	100156.17	99844.08	1788631.04	1791424.29	48
13	5611. 19	5620. 05	100157.80	99842.45	1779344.17	1782151.98	47
14	5640. 24	5649. 23	100159.44	99840.81	1770152.94	1772975.31	46
15	5669. 28	5678. 41	100161.09	99839.16	1761055.88	1763892.80	45
16	5698. 32	5707. 59	100162.75	99837.51	1752051.55	1754903.03	44
17	5727. 36	5736. 78	100164.42	99835.85	1743138.54	1746004.57	43
18	5756. 40	5765. 96	100166.10	99834.18	1734315.46	1737196.05	42
19	5785. 44	5795. 15	100167.78	99832.50	1725580.95	1728476.10	41
20	5814. 48	5824. 34	100169.47	99830.81	1716933.69	1719843.40	40
21	5843. 52	5853. 52	100171.17	99829.11	1708372.38	1711296.64	39
22	5872. 56	5882. 71	100172.88	99827.41	1699895.74	1702834.56	38
23	5901. 60	5911. 90	100174.60	99825.70	1691502.51	1694455.89	37
24	5930. 64	5941. 09	100176.33	99823.98	1683191.48	1686159.41	36
25	5959. 67	5970. 29	100178.07	99822.25	1674961.44	1677945.92	35
26	5988. 71	5999. 48	100179.81	99820.51	1666811.20	1669808.25	34
27	6017. 75	6028. 67	100181.56	99818.76	1658739.62	1661751.22	33
28	6046. 78	6057. 87	100183.32	99817.01	1650745.55	1653771.71	32
29	6075. 82	6087. 06	100185.09	99815.25	1642827.89	1645868.81	31
30	6104. 85	6116. 26	100186.87	99813.48	1634985.55	1638040.82	30
31	6133. 89	6145. 46	100188.66	99811.70	1627217.44	1630387.28	29
32	6162. 92	6174. 66	100190.46	99809.91	1619522.53	1622606.93	28
33	6191. 96	6203. 86	100192.26	99808.11	1611899.79	1614998.74	27
34	6220. 99	6233. 06	100194.07	99806.30	1604348.19	1607461.70	26
35	6250. 02	6262. 26	100195.89	99804.49	1596866.74	1599994.81	25
36	6279. 05	6291. 47	100197.72	99802.67	1589454.48	1592597.11	24
37	6308. 08	6320. 67	100199.56	99800.84	1582110.45	1585267.64	23
38	6337. 11	6349. 88	100201.41	99799.00	1574833.71	1578005.45	22
39	6366. 14	6379. 08	100203.26	99797.15	1567623.33	1570809.63	21
40	6395. 17	6408. 29	100205.12	99795.29	1560478.41	1563679.27	20
41	6424. 20	6437. 50	100206.99	99793.43	1553398.06	1556613.48	19
42	6453. 23	6466. 71	100208.87	99791.56	1546381.41	1549611.39	18
43	6482. 26	6495. 92	100210.76	99789.68	1539427.60	1542672.15	17
44	6511. 29	6525. 13	100212.66	99787.79	1532535.80	1535794.90	16
45	6540. 31	6554. 35	100214.57	99785.89	1525705.17	1528978.83	15
46	6569. 34	6583. 56	100216.49	99783.98	1518934.90	1522223.12	14
47	6598. 36	6612. 78	100218.41	99782.06	1512224.20	1515526.98	13
48	6627. 39	6641. 99	100220.34	99780.14	1505572.27	1508889.61	12
49	6656. 41	6671. 21	100222.28	99778.21	1498978.36	1502310.26	11
50	6685. 44	6700. 43	100224.23	99776.27	1492441.70	1495788.16	10
51	6714. 46	6729. 65	100226.19	99774.32	1485961.55	1489322.58	9
52	6743. 48	6728. 87	100228.16	99772.36	1479537.18	1482912.77	8
53	6772. 51	6788. 09	100230.13	99770.39	1473167.87	1476558.02	7
54	6801. 53	6817. 32	100232.11	99768.42	1466852.92	1470257.63	6
55	6830. 55	6846. 54	100234.10	99766.44	1460591.63	1464010.90	5
56	6859. 57	6875. 77	100236.10	99764.45	1454383.32	1457817.15	4
57	6888. 59	6904. 99	100238.11	99762.45	1448227.32	1451676.71	3
58	6917. 61	6934. 22	100240.13	99760.44	1442122.97	1445585.92	2
59	6946. 63	6963. 45	100242.16	99758.42	1436069.61	1439547.13	1
60	6975. 65	6992. 68	100244.19	99756.40	1430066.63	1433558.70	0

4	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	6975. 65	6992. 68	100244.19	99756.40	1430066.63	1433558.70	60
1	7004. 66	7021. 91	100246.23	99754.37	1424113.37	1427620.01	59
2	7033. 68	7051. 15	100248.28	99752.33	1418209.24	1421730.45	58
3	7062. 70	7080. 38	100250.34	99750.28	1412353.63	1415889.39	57
4	7091. 71	7109. 61	100252.41	99748.22	1406545.93	1410096.25	56
5	7120. 73	7138. 85	100254.49	99746.15	1400785.56	1404350.45	55
6	7149. 74	7168. 09	100256.58	99744.07	1395071.94	1398651.39	54
7	7178. 76	7197. 33	100258.68	99741.99	1389404.51	1392998.52	53
8	7207. 77	7226. 57	100260.78	99739.90	1383782.70	1387391.28	52
9	7236. 78	7255. 81	100262.89	99737.80	1378205.98	1381829.12	51
10	7265. 80	7285. 05	100265.01	99735.69	1372673.79	1376311.49	50
11	7294. 81	7314. 30	100267.14	99733.57	1367185.60	1370837.87	49
12	7323. 82	7343. 54	100269.28	99731.44	1361740.89	1365407.72	48
13	7352. 83	7372. 79	100271.43	99729.31	1356339.15	1360020.54	47
14	7381. 84	7402. 03	100273.58	99727.17	1350979.86	1354675.82	46
15	7410. 85	7431. 28	100275.74	99725.02	1345662.53	1349373.06	45
16	7439. 86	7460. 53	100277.91	99722.86	1340386.67	1344111.76	44
17	7468. 87	7489. 79	100280.09	99720.69	1335151.79	1338891.44	43
18	7497. 87	7519. 04	100282.28	99718.51	1329957.41	1333711.63	42
19	7526. 88	7548. 29	100284.48	99716.32	1324803.07	1328571.86	41
20	7555. 89	7577. 55	100286.68	99714.13	1319688.30	1323471.65	40
21	7584. 89	7606. 80	100288.89	99711.93	1314612.66	1318410.57	39
22	7613. 90	7636. 06	100291.11	99709.72	1309575.68	1313388.16	38
23	7642. 90	7665. 32	100293.34	99707.50	1304576.93	1308403.98	37
24	7671. 90	7694. 58	100295.58	99705.27	1299615.98	1303457.60	36
25	7700. 91	7723. 84	100297.83	99703.03	1294692.40	1298548.58	35
26	7729. 91	7753. 11	100300.09	98700.79	1289805.77	1293676.51	34
27	7758. 91	7782. 37	100302.36	99698.54	1284955.66	1288840.97	33
28	7787. 91	7811. 64	100304.64	99696.28	1280141.68	1284041.55	32
29	7819. 91	7840. 90	100306.93	99694.01	1275363.41	1279277.86	31
30	7845. 91	7870. 17	100309.22	99691.73	1270620.47	1274549.48	30
31	7874. 91	7899. 44	100311.52	99689.44	1265912.46	1269856.04	29
32	7903. 91	7928. 71	100313.83	99687.15	1261239.00	1265197.15	28
33	7932. 90	7957. 98	100316.15	99684.85	1256599.71	1260572.42	27
34	7961. 90	7987. 26	100318.48	99682.54	1251994.20	1255981.48	26
35	7990. 90	8016. 53	100320.81	99680.22	1247422.12	1251423.97	25
36	8019. 89	8045. 81	100323.15	99677.89	1242883.10	1246899.52	24
37	8048. 89	8075. 09	100325.80	99675.55	1238376.79	1242407.77	23
38	8077. 88	8104. 37	100327.86	99673.20	1233902.82	1237948.37	22
39	8106. 87	8133. 65	100330.23	99670.85	1229460.85	1233520.97	21
40	8135. 87	8162. 93	100332.61	99668.49	1225050.55	1229125.23	20
41	8164. 86	8192. 21	100335.00	99666.12	1220671.56	1224760.82	19
42	8193. 85	8221. 50	100337.40	99663.74	1216323.56	1220427.39	18
43	8222. 84	8250. 78	100339.80	99661.35	1212006.22	1216124.62	17
44	8251. 83	8280. 07	100342.21	99658.95	1207719.22	1211852.18	16
45	8280. 82	8309. 36	100344.63	99656.55	1203462.23	1207609.76	15
46	8309. 81	8338. 65	100347.06	99654.14	1199234.95	1203397.05	14
47	8338. 80	8367. 94	100349.50	99651.72	1195037.05	1199213.72	13
48	8367. 78	8397. 23	100351.95	99649.29	1190868.24	1195059.48	12
49	8396. 77	8426. 53	100354.41	99646.85	1186728.21	1190934.02	11
50	8425. 76	8455. 83	100356.87	99644.40	1182616.67	1186837.05	10
51	8454. 74	8485. 12	100359.34	99641.94	1178533.31	1182768.27	9
52	8483. 73	8514. 42	100361.82	99639.48	1174477.86	1178727.39	8
53	8512. 71	8543. 72	100364.31	99637.01	1170450.03	1174714.12	7
54	8541. 69	8573. 02	100366.81	99634.53	1166449.53	1170728.19	6
55	8570. 67	8602. 33	100369.32	99632.04	1162476.08	1166769.32	5
56	8599. 66	8631. 63	100371.84	99629.54	1158529.42	1162837.23	4
57	8628. 64	8660. 94	100374.36	99627.03	1154609.27	1158931.65	3
58	8657. 62	8690. 25	100376.89	99624.52	1150715.36	1155052.31	2
59	8686. 60	8719. 56	100379.43	99622.00	1146847.43	1151198.96	1
60	8715. 57	8748. 87	100381.98	99619.47	1143005.23	1147371.32	0

5	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	8715. 57	8748. 87	100381.98	99619.47	1143005.23	1147371.32	60
1	8744. 55	8778. 18	100384.54	99616.93	1139188.49	1143569.16	59
2	8773. 53	8807. 49	100387.11	96614.38	1135396.96	1139792.20	58
3	8802. 51	8836. 81	100389.69	99611.82	1131650.40	1136040.21	57
4	8831. 48	8866. 12	100392.28	99609.26	1127888.55	1132312.93	56
5	8860. 46	8895. 44	100394.87	99606.69	1124171.17	1128610.13	55
6	8889. 43	8924. 76	100397.47	99604.11	1120478.03	1124931.56	54
7	8918. 40	8954. 08	100400.08	99601.52	1116808.88	1121276.99	53
8	8947. 38	8983. 41	100402.70	99598.92	1113163.50	1117646.17	52
9	8976. 35	9012. 73	100405.33	99596.31	1109541.64	1114038.90	51
10	9005. 32	9042. 06	100407.97	99593.69	1105943.10	1110454.92	50
11	9034. 29	9071. 38	100410.61	99591.07	1102367.63	1106894.03	49
12	9063. 26	9100. 71	100413.26	99588.44	1098815.01	1103355.99	48
13	9092. 23	9130. 04	100415.92	99585.80	1095285.04	1099840.59	47
14	9121. 19	9159. 38	100418.59	99583.15	1091777.49	1096347.61	46
15	9150. 16	9188. 71	100421.27	99580.49	1088292.14	1092876.84	45
16	9179. 13	9218. 04	100423.96	99577.82	1084828.80	1089428.07	44
17	9208. 09	9247. 38	100426.66	99575.15	1081387.24	1086001.09	43
18	9237. 06	9276. 72	100429.37	99572.47	1077967.27	1082595.69	42
19	9266. 02	9306. 06	100432.08	99569.78	1074568.68	1079211.68	41
20	9294. 99	9335. 40	100434.80	99567.08	1071191.26	1075848.84	40
21	9323. 95	9364. 74	100437.53	99564.37	1067834.84	1072506.99	39
22	9352. 91	9394. 09	100440.27	99561.65	1064499.19	1069185.92	38
23	9381. 87	9423. 44	100443.02	99558.92	1061184.14	1065885.45	37
24	9410. 83	9452. 78	100445.78	99556.19	1057889.50	1062605.38	36
25	9439. 79	9482. 13	100448.55	99553.45	1054615.07	1059345.53	35
26	9468. 75	9511. 48	100451.33	99550.70	1051360.67	1056105.70	34
27	9497. 71	9540. 84	100454.11	99547.94	1048126.11	1052885.72	33
28	9526. 66	9570. 19	100456.90	99545.17	1044911.22	1049685.41	32
29	9555. 62	9599. 55	100459.70	99542.40	1041715.81	1046504.58	31
30	9584. 58	9628. 90	100462.51	99539.62	1038539.71	1043343.05	30
31	9613. 53	9658. 26	100465.33	99536.83	1035382.74	1040200.66	29
32	9642. 48	9687. 63	100468.16	99534.03	1032244.73	1037077.23	28
33	9671. 44	9716. 99	100470.99	99531.22	1029125.51	1033972.59	27
34	9700. 39	9746. 35	100473.83	99528.40	1026024.90	1030886.56	26
35	9729. 34	9775. 72	100476.68	99525.57	1022942.76	1027818.99	25
36	9758. 29	9805. 09	100479.54	99522.74	1019878.90	1024769.71	24
37	9787. 24	9834. 46	100482.41	99519.90	1016833.16	1021738.55	23
38	9816. 19	9863. 83	100485.29	99517.05	1013805.39	1018725.36	22
39	9845. 14	9893. 20	100488.18	99514.19	1010795.42	1015729.98	21
40	9874. 08	9922. 57	100491.08	99511.32	1007803.11	1012752.24	20
41	9903. 03	9951. 95	100493.99	99508.44	1004828.28	1009792.00	19
42	9931. 97	9981. 33	100496.90	99505.55	1001870.80	1006849.09	18
43	9960. 92	10010.71	100499.82	99502.66	998930.50	1003923.38	17
44	9989. 86	10040.09	100502.75	99499.76	996007.24	1001014.70	16
45	10018.81	10069.47	100505.69	99496.85	993100.88	998122.91	15
46	10047.75	10098.85	100508.64	99493.93	990211.25	995247.87	14
47	10076.69	10128.24	100511.60	99491.00	987338.23	992389.43	13
48	10105.63	10157.63	100514.57	99488.06	984481.66	989547.44	12
49	10134.57	10187.02	100517.54	99485.12	981641.40	986721.76	11
50	10163.51	10216.41	100520.52	99482.17	978817.32	983912.27	10
51	10192.45	10245.80	100523.51	99479.21	976009.27	981118.80	9
52	10221.38	10275.20	100526.51	99476.24	973217.13	978341.24	8
53	10250.32	10304.60	100529.52	99473.26	970440.75	975579.44	7
54	10279.25	10334.00	100532.54	99470.27	967680.00	972833.27	6
55	10308.19	10363.40	100535.57	99467.28	964934.75	970102.60	5
56	10337.12	10392.80	100538.60	99464.28	962204.86	967387.30	4
57	10366.05	10422.20	300541.64	99461.27	959490.22	964687.24	3
58	10394.99	10451.60	100544.69	99458.25	956790.68	962002.29	2
59	10423.92	10481.01	100547.75	99455.22	954106.13	959332.33	1
60	10452.85	10510.42	100550.82	99452.18	951436.45	956677.22	0

6	Secans	Tangens	Sinus	Sinus	Tangens	Secans	
0	10452.85	10510.42	100550.82	99452.18	951436.45	956677.22	60
1	10481.78	10539.83	100553.90	99449.14	948781.49	954036.86	59
2	10510.70	10569.34	100556.99	99446.09	946141.16	951411.10	58
3	10539.63	10598.66	100560.09	99443.03	943515.31	948799.84	57
4	10568.56	10628.08	100563.20	99439.96	940903.84	946202.96	56
5	10597.48	10657.50	100566.31	99436.88	938306.63	943620.33	55
6	10626.41	10686.92	100569.43	99433.79	935723.55	941051.84	54
7	10655.33	10716.34	100572.56	99430.69	933154.50	938497.38	53
8	10684.25	10745.76	100575.70	99427.59	930599.36	935956.82	52
9	10713.18	10775.19	100578.85	99424.48	928058.02	933430.06	51
10	10742.10	10804.62	100582.01	99421.36	925530.35	930916.99	50
11	10771.02	10834.05	100585.18	99418.23	923016.27	928417.49	49
12	10799.94	10863.48	100588.35	99415.09	920515.64	925931.45	48
13	10828.85	10892.91	100591.53	99411.94	918028.38	923458.77	47
14	10857.77	10922.34	100594.72	99408.79	915554.36	920999.34	46
15	10886.69	10951.78	100597.92	99405.63	913093.48	918553.05	45
16	10915.60	10981.22	100601.13	99402.46	910645.64	916119.80	44
17	10944.52	11010.66	100604.35	99399.28	908210.74	913699.49	43
18	10973.43	11040.10	100607.58	99396.09	905788.67	911292.00	42
19	11002.34	11069.54	100610.81	99392.89	903379.33	908897.25	41
20	11031.26	11098.99	100614.05	99389.69	900982.61	906515.12	40
21	11060.17	11128.44	100617.30	99386.48	898598.43	904145.53	39
22	11089.08	11157.89	100620.56	99383.26	896226.68	901788.37	38
23	11117.99	11187.34	100623.83	99380.03	893867.26	899443.54	37
24	11146.89	11216.79	100627.11	99376.79	891520.08	897110.95	36
25	11175.80	11246.25	100630.40	99373.54	889185.05	894790.51	35
26	11204.71	11275.71	100633.70	99370.28	886862.06	892482.11	34
27	11233.61	11305.17	100637.01	99367.02	884551.03	890185.67	33
28	11262.52	11334.63	100640.32	99363.75	882251.86	887901.09	32
29	11291.42	11364.09	100643.64	99360.47	879964.46	885628.28	31
30	11320.32	11393.56	100646.97	99357.18	877688.74	883367.15	30
31	11349.22	11423.03	100650.31	99353.88	875424.61	881117.61	29
32	11378.12	11452.50	100653.66	99350.58	873171.98	878879.57	28
33	11407.02	11481.97	100657.02	99347.37	870930.77	876652.95	27
34	11435.92	11511.44	100660.39	99344.15	868700.88	874437.66	26
35	11464.82	11540.91	100663.77	99340.92	866482.23	872233.61	25
36	11493.71	11570.39	100667.15	99337.68	864274.75	870040.71	24
37	11522.61	11599.87	100670.54	99334.43	862078.33	867858.89	23
38	11551.51	11629.35	100673.94	99331.17	859892.90	865688.05	22
39	11580.40	11658.83	100677.35	99327.90	857718.38	863528.12	21
40	11609.29	11688.31	100680.77	99324.62	855554.68	861379.01	20
41	11638.18	11717.80	100684.20	99321.33	853401.72	859240.65	19
42	11667.07	11747.29	100687.64	99318.03	851259.43	857112.95	18
43	11695.96	11776.78	100691.08	99314.72	849127.72	854995.84	17
44	11724.85	11806.28	100694.53	99311.40	847006.51	852889.23	16
45	11753.74	11835.78	100697.99	99308.08	844895.73	850793.04	15
46	11782.63	11865.28	100701.46	99304.75	842795.31	848707.21	14
47	11811.51	11894.78	100704.94	99301.41	840705.15	846631.65	13
48	11840.40	11924.28	100708.43	99298.06	838625.19	844566.29	12
49	11869.28	11953.78	100711.93	99294.70	836555.36	842511.05	11
50	11898.16	11983.28	100715.44	99291.33	834495.57	840465.86	10
51	11927.04	12012.79	100718.96	99287.95	832445.77	838430.65	9
52	11955.93	12042.30	100722.48	99284.56	830405.86	836405.34	8
53	11984.81	12071.81	100726.01	99281.16	828375.79	834389.86	7
54	12013.68	12101.32	100729.55	99277.75	826355.47	832384.15	6
55	12042.56	12130.84	100733.10	99274.33	824344.85	830388.12	5
56	12071.44	12160.36	100736.66	99270.90	822343.84	828401.71	4
57	12100.31	12189.88	100740.23	99267.46	820352.39	826424.85	3
58	12129.19	12219.40	100743.81	99264.01	818370.41	824457.48	2
59	12158.06	12248.93	100747.40	99260.56	816397.86	822499.52	1
60	12186.93	12278.46	100750.99	99257.10	814434.64	820550.90	0

7	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	12186.93	12278.46	100750.99	99254.62	814434.64	820550.90	60
1	12215.81	12307.99	100754.59	99251.07	812480.71	818611.57	59
2	12244.68	12337.52	100758.20	99247.51	810535.99	816681.45	58
3	12273.55	12367.05	100761.82	99243.94	808600.42	814760.48	57
4	12302.41	12396.58	100765.45	99240.36	806673.94	812848.60	56
5	12331.28	12426.12	100769.09	99236.78	804756.47	810945.73	55
6	12360.15	12455.66	100772.74	99233.19	802847.96	809051.82	54
7	12389.01	12485.20	100776.39	99229.59	800948.35	807166.81	53
8	12417.88	12514.74	100780.05	99225.98	799057.56	805290.62	52
9	12446.74	12544.29	100783.72	99222.36	797175.55	803423.21	51
10	12475.60	12573.84	100787.40	99218.74	795302.24	801564.50	50
11	12504.46	12603.39	100791.09	99215.11	793437.58	799714.45	49
12	12533.32	12632.94	100794.79	99211.47	791581.51	797872.98	48
13	12562.18	12662.49	100798.50	99207.82	789733.96	796040.03	47
14	12591.04	12692.05	100802.22	99204.16	787894.89	794215.56	46
15	12619.90	12721.61	100805.95	99200.49	786064.23	792399.50	45
16	12648.75	12751.17	100809.69	99196.81	784241.91	790591.79	44
17	12677.61	12780.73	100813.43	99193.13	782427.90	788792.38	43
18	12706.46	12810.29	100817.18	99189.44	780622.12	787001.20	42
19	12735.31	12839.86	100820.94	99185.74	778824.53	785218.21	41
20	12764.16	12869.43	100824.71	99182.03	777035.06	783443.35	40
21	12793.01	12899.00	100828.49	99178.31	775253.66	781676.56	39
22	12821.86	12928.57	100832.28	99174.59	773480.28	779917.78	38
23	12850.71	12958.15	100836.07	99170.86	771714.86	778166.97	37
24	12879.56	12987.73	100839.88	99167.12	769957.35	776424.06	36
25	12908.41	13017.31	100843.70	99163.37	768207.69	774689.01	35
26	12937.25	13046.89	100847.52	99159.61	766465.84	772961.76	34
27	12966.09	13076.48	100851.35	99155.84	764731.74	771242.27	33
28	12994.94	13106.07	100855.19	99152.06	763005.33	769530.47	32
29	13023.78	13135.66	100859.04	99148.28	761286.57	767826.31	31
30	13052.62	13165.25	100862.90	99144.49	759575.41	766129.76	30
31	13081.46	13194.84	100866.77	99140.69	757871.79	764440.75	29
32	13110.30	13224.44	100870.65	99136.88	756175.67	762759.23	28
33	13139.13	13254.04	100874.53	99133.06	754486.99	761085.16	27
34	13167.97	13283.64	100878.42	99129.23	752805.71	759418.49	26
35	13196.81	13313.24	100882.32	99125.39	751131.78	757759.16	25
36	13225.64	13342.85	100886.23	99121.55	749465.14	756107.13	24
37	13254.47	13372.46	100890.15	99117.70	747805.76	754462.36	23
38	13283.30	13402.07	100894.08	99113.84	746153.57	752824.78	22
39	13312.13	13431.68	100898.02	99109.97	744508.55	751194.37	21
40	13340.96	13461.29	100901.97	99106.09	742870.64	749571.06	20
41	13369.79	13490.91	100905.92	99102.21	741239.78	747954.82	19
42	13398.62	13520.53	100909.88	99098.32	739615.95	746345.60	18
43	13427.44	13550.15	100913.85	99094.42	737999.09	744743.55	17
44	13456.27	13579.77	100917.83	99090.51	736389.16	743148.03	16
45	13485.09	13609.40	100921.82	99086.59	734786.10	741559.59	15
46	13513.92	13639.03	100925.82	99082.66	733189.89	739977.98	14
47	13542.74	13668.66	100929.83	99078.72	731600.47	738403.18	13
48	13571.56	13698.29	100933.85	99074.78	730017.80	736835.12	12
49	13600.38	13727.93	100937.88	99070.83	728441.84	735273.77	11
50	13629.19	13757.57	100941.92	99066.87	726872.55	733719.09	10
51	13658.01	13787.21	100945.96	99062.90	725309.87	732171.02	9
52	13686.83	13816.85	100950.01	99058.92	723753.78	730629.54	8
53	13715.64	13846.50	100954.07	99054.93	722204.22	729094.60	7
54	13744.45	13876.15	100958.14	99050.94	720661.16	727566.16	6
55	13773.27	13905.80	100962.22	99046.94	719124.56	726044.17	5
56	13802.08	13935.45	100966.31	99042.93	717594.37	724528.59	4
57	13830.89	13965.10	100970.41	99038.91	716070.56	723019.40	3
58	13859.70	13994.76	100974.52	99034.88	714553.08	721516.53	2
59	13888.50	14024.42	100978.64	99030.84	713041.90	720019.96	1
60	13917.31	14054.08	100982.76	99026.80	711536.97	718529.65	0

8	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	13917.31	14034.68	100982.76	99026.80	711536.97	718529.65	60
1	13946.12	14083.74	100986.89	99022.75	710038.26	717045.56	59
2	13974.92	14113.41	100991.03	99018.69	708545.73	715567.64	58
3	14003.72	14143.08	100995.18	99014.62	707059.34	714095.87	57
4	14032.52	14172.75	100999.34	99010.54	705579.05	712630.19	56
5	14061.32	14202.43	101003.51	99006.45	704104.82	711170.58	55
6	14090.12	14232.11	101007.69	99002.36	702636.62	709717.00	54
7	14118.92	14261.79	101011.88	98998.26	701174.41	708269.41	53
8	14147.72	14291.47	101016.07	98994.15	699718.06	706827.77	52
9	14176.51	14321.15	101020.27	98990.03	698267.81	705392.05	51
10	14205.31	14350.84	101024.48	98985.90	696823.35	703962.20	50
11	14234.10	14380.53	101028.70	98981.76	695384.73	702538.20	49
12	14262.89	14410.22	101032.93	98977.62	693951.92	701120.01	48
13	14291.68	14439.91	101037.17	98973.47	692524.89	699707.60	47
14	14320.47	14469.61	101041.42	98969.31	691103.59	698300.92	46
15	14349.26	14499.31	101045.68	98965.14	689687.99	696899.94	45
16	14378.05	14529.01	101049.95	98960.96	688278.07	695504.64	44
17	14406.84	14558.71	101054.23	98956.77	686873.78	694114.96	43
18	14435.62	14588.42	101058.51	98952.57	685475.08	692730.89	42
19	14464.40	14618.13	101062.80	98948.37	684081.96	691352.39	41
20	14493.19	14647.84	101067.10	98944.16	682694.37	689979.42	40
21	14521.97	14677.55	101071.41	98939.94	681312.27	688611.95	39
22	14550.75	14707.27	101075.73	98935.71	679935.65	687249.95	38
23	14579.53	14736.99	101080.06	98931.47	678564.46	685893.38	37
24	14608.30	14766.71	101084.40	98927.23	677198.67	684542.22	36
25	14637.08	14796.44	101088.75	98922.98	675838.26	683196.42	35
26	14665.85	14826.17	101093.11	98918.72	674483.18	681855.97	34
27	14694.63	14855.90	101097.47	98914.45	673133.41	680520.82	33
28	14723.40	14885.63	101101.84	98910.17	671788.91	679190.95	32
29	14752.17	14915.36	101106.22	98905.88	670449.66	677866.32	31
30	14780.94	14945.10	101110.61	98901.58	669115.62	676546.91	30
31	14809.71	14974.84	101115.01	98897.28	667786.77	675232.68	29
32	14838.48	15004.58	101119.42	98892.97	666463.07	673923.60	28
33	14867.24	15034.33	101123.84	98888.65	665144.49	672619.65	27
34	14896.01	15064.08	101128.27	98884.32	663831.00	671320.79	26
35	14924.77	15093.83	101132.71	98879.98	662522.58	670026.99	25
36	14953.53	15123.58	101137.15	98875.63	661219.19	668738.22	24
37	14982.30	15153.33	101141.60	98871.28	659920.80	667454.46	23
38	15011.06	15183.09	101146.06	98866.92	658627.39	666175.68	22
39	15039.81	15212.85	101150.53	98862.55	657338.92	664901.84	21
40	15068.57	15242.61	101155.01	98858.17	656055.38	663632.93	20
41	15097.33	15272.38	101159.50	98853.78	654776.72	662368.90	19
42	15126.08	15302.15	101164.00	98849.38	653502.93	661109.73	18
43	15154.84	15331.92	101168.51	98844.98	652233.96	659855.40	17
44	15183.59	15361.89	101173.03	98840.57	650969.81	658605.87	16
45	15212.34	15391.47	101177.56	98836.15	649710.43	657361.12	15
46	15241.09	15421.25	101182.09	98831.72	648455.81	656121.13	14
47	15269.84	15451.03	101186.63	98827.28	647205.91	654885.86	13
48	15298.58	15480.82	101191.18	98822.83	645960.70	653655.28	12
49	15327.33	15510.61	101195.74	98818.38	644720.17	652429.38	11
50	15356.07	15540.40	101200.31	98813.92	643484.28	651208.12	10
51	15384.82	15570.19	101204.89	98809.45	642253.01	649991.48	9
52	15413.56	15599.98	101209.48	98804.97	641026.33	648779.44	8
53	15442.30	15629.78	101214.08	98800.48	639804.22	647571.95	7
54	15471.04	15659.58	101218.69	98795.98	638586.65	646369.01	6
55	15499.78	15689.38	101223.31	98791.48	637373.59	645170.59	5
56	15528.51	15719.19	101227.93	98786.97	636165.02	643976.66	4
57	15557.25	15749.00	101232.56	98782.45	634960.92	642787.19	3
58	15585.96	15778.81	101237.20	98777.92	633761.26	641602.16	2
59	15614.72	15808.62	101241.85	98773.38	632566.01	640421.54	1
60	15643.45	15838.44	101246.51	98768.83	631375.15	639245.32	0

9	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	15643.45	15838.44	101246.51	98768.83	631375.15	639245.32	60
1	15672.18	15868.26	101251.18	98764.28	630188.66	638073.47	59
2	15700.91	15898.08	101255.86	98759.72	629006.51	636905.95	58
3	15729.63	15927.91	101260.55	98755.15	627828.68	635742.76	57
4	15758.36	15957.74	101265.25	98750.57	626655.14	634583.86	56
5	15787.08	15987.57	101269.96	98745.98	625485.88	633429.23	55
6	15815.81	16017.40	101274.67	98741.38	624320.86	632278.84	54
7	15844.53	16047.24	101279.39	98736.77	623160.07	631132.69	53
8	15873.25	16077.08	101284.12	98732.16	622003.47	629990.73	52
9	15901.97	16106.92	101288.86	98727.54	620851.06	628852.95	51
10	15930.69	16136.77	101293.61	98722.91	619702.79	627719.33	50
11	15959.40	16166.62	101298.37	98718.27	618558.67	626589.84	49
12	15988.12	16196.47	101303.14	98713.62	617418.65	625464.46	48
13	16016.83	16226.32	101307.92	98708.97	616282.72	624343.16	47
14	16045.55	16256.17	101312.71	98704.31	615150.85	623225.94	46
15	16074.26	16286.03	101317.51	98699.64	614023.03	622112.75	45
16	16102.97	16315.89	101322.31	98694.96	612899.23	621003.59	44
17	16131.67	16345.76	101327.12	98690.27	611779.43	619898.43	43
18	16160.38	16375.63	101331.94	98685.57	610663.60	618797.25	42
19	16189.09	16405.50	101336.77	98680.86	609551.74	617700.03	41
20	16217.79	16435.37	101341.61	98676.15	608443.81	616606.74	40
21	16246.50	16465.25	101346.46	98671.43	607339.79	615517.36	39
22	16275.20	16495.13	101351.32	98666.70	606239.67	614431.89	38
23	16303.90	16525.01	101356.19	98661.96	605143.43	613350.28	37
24	16332.60	16554.89	101361.07	98657.21	604051.03	612272.53	36
25	16361.29	16584.78	101365.95	98652.46	602962.47	611198.61	35
26	16389.99	16614.67	101370.84	98647.70	601877.72	610128.50	34
27	16418.68	16644.56	101375.74	98642.93	600796.76	609062.19	33
28	16447.38	16674.46	101380.65	98638.15	599719.57	607999.64	32
29	16476.07	16704.36	101385.57	98633.36	598646.14	606940.85	31
30	16504.76	16734.26	101390.50	98628.56	597576.44	605885.80	30
31	16533.45	16764.16	101395.44	98623.75	596510.45	604834.45	29
32	16562.14	16794.07	101400.39	98618.94	595448.15	603786.80	28
33	16590.82	16823.98	101405.35	98614.12	594389.52	602742.82	27
34	16619.51	16853.89	101410.32	98609.29	593334.55	601702.50	26
35	16648.19	16883.81	101415.30	98604.45	592283.22	600665.81	25
36	16676.87	16913.73	101420.29	98599.60	591235.50	599632.74	24
37	16705.55	16943.65	101425.29	98594.74	590191.38	598603.26	23
38	16734.23	16973.58	101430.29	98589.88	589150.84	597577.37	22
39	16762.91	17003.51	101435.30	98585.01	588113.86	596555.04	21
40	16791.59	17033.44	101440.32	98580.15	587080.42	595536.25	20
41	16820.26	17063.37	101445.35	98575.24	586050.51	594520.98	19
42	16848.94	17093.31	101450.39	98570.34	585024.10	593509.22	18
43	16877.61	17123.25	101455.44	98565.44	584001.17	592500.95	17
44	16906.28	17153.19	101460.50	98560.53	582981.72	591496.14	16
45	16934.95	17183.14	101465.57	98555.61	581965.72	590494.79	15
46	16963.62	17213.09	101470.64	98550.68	580953.15	589496.88	14
47	16992.28	17243.04	101475.72	98545.74	579944.00	588502.38	13
48	17020.95	17273.00	101480.81	98540.79	578938.25	587511.28	12
49	17049.61	17302.96	101485.91	98535.83	577935.88	586523.56	11
50	17078.28	17332.92	101491.02	98530.87	576936.88	585539.20	10
51	17106.94	17362.88	101496.14	98525.90	575941.22	584558.20	9
52	17135.60	17392.85	101501.27	98520.92	574948.89	583580.53	8
53	17164.25	17422.82	101506.41	98515.93	573959.88	582606.17	7
54	17192.91	17452.79	101511.56	98510.93	572974.16	581635.10	6
55	17221.56	17482.77	101516.72	98505.92	571991.73	580667.32	5
56	17250.22	17512.75	101521.89	98500.91	571012.56	579702.80	4
57	17278.87	17542.73	101527.07	98495.89	570036.63	578741.53	3
58	17307.52	17572.72	101532.26	98490.86	569063.94	577783.50	2
59	17336.17	17602.71	101537.46	98485.82	568094.46	576828.67	1
60	17364.82	17632.70	101542.67	98480.77	567128.18	575877.05	0

10	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	17364.82	17632.70	101542.67	98480.77	567128.18	575877.05	60
1	17393.46	17662.69	101547.88	98475.71	566165.09	574928.61	59
2	17422.11	18692.69	101553.10	98470.65	565205.16	573983.33	58
3	17450.75	17722.69	101558.33	98465.58	564248.38	573041.21	57
4	17479.39	17752.69	101563.57	98460.50	563294.74	572102.23	56
5	17508.03	17782.70	101568.82	98455.41	562344.21	571166.36	55
6	17536.67	17812.71	101574.08	98450.31	561396.80	570233.60	54
7	17565.31	17842.72	101579.35	98445.21	560452.47	569303.93	53
8	17593.95	17872.74	101584.63	98440.10	559511.21	568377.34	52
9	17622.58	17902.76	101589.92	98434.98	558573.02	567453.80	51
10	17651.21	17932.78	101595.21	98429.85	557637.86	566533.31	50
11	17679.84	17962.81	101600.51	98424.71	556705.74	565615.84	49
12	17708.47	17992.84	101605.82	98419.56	555776.63	564701.40	48
13	17737.10	18022.87	101611.14	98414.40	554850.52	563789.95	47
14	17765.73	18052.91	101616.47	98409.24	553927.40	562881.48	46
15	17794.35	18082.95	101621.81	98404.07	553007.24	561975.99	45
16	17822.98	18112.99	101627.16	98398.89	552090.05	561073.45	44
17	17851.60	18143.03	101632.52	98393.70	551175.79	560173.86	43
18	17880.22	18173.08	101637.89	98388.50	550264.46	559277.19	42
19	17908.84	18203.13	101643.27	98383.29	549356.04	558383.43	41
20	17937.46	18233.18	101648.66	98378.08	548450.52	557492.58	40
21	17966.07	18263.24	101654.06	98372.86	547547.88	556604.60	39
22	17994.69	18293.30	101659.46	98367.63	546648.12	555719.50	38
23	18023.30	18323.36	101664.87	98362.39	545751.21	554837.26	37
24	18051.91	18353.43	101670.29	98357.14	544857.15	553957.86	36
25	18080.52	18383.50	101675.72	98351.89	543965.92	553081.29	35
26	18109.13	18413.57	101681.16	97346.63	543077.50	552207.54	34
27	18137.74	18443.65	101686.61	98341.36	542191.88	551336.59	33
28	18166.35	18473.73	101692.07	98336.08	541309.06	550468.43	32
29	18194.95	18503.81	101697.54	98330.79	540429.01	549603.05	31
30	18223.55	18533.90	101703.02	98325.49	539551.72	548740.43	30
31	18252.15	18563.99	101708.51	98320.18	538677.18	547880.55	29
32	18280.75	18594.08	101714.01	98314.87	537805.38	547023.42	28
33	18309.35	18624.18	101719.52	98309.55	536936.30	546169.01	27
34	18337.95	18654.28	101725.04	98304.22	536069.93	545317.31	26
35	18366.54	18684.38	101730.56	98298.88	535206.26	544468.31	25
36	18395.13	18714.49	101736.09	98293.53	534345.27	543621.99	24
37	18423.73	18744.60	101741.63	98288.17	533486.96	542778.35	23
38	18452.32	18774.71	101747.18	98282.81	532631.31	541937.37	22
39	18480.91	18804.83	101752.74	98277.44	531778.30	541099.03	21
40	18509.49	18834.95	101758.31	98272.06	530927.93	540263.33	20
41	18538.08	18865.07	101763.89	98266.67	530080.18	539430.26	19
42	18566.66	18895.20	101769.48	98261.27	529235.05	538599.79	18
43	18595.24	18925.33	101775.08	98255.87	528392.51	537771.92	17
44	18623.82	18955.46	101780.69	68250.46	527552.55	536946.64	16
45	18652.40	18985.59	101786.31	98245.04	526715.17	536123.93	15
46	18680.98	19015.73	101791.94	98239.61	525880.35	535303.79	14
47	18709.56	19045.87	101797.58	98234.17	525048.09	534486.20	13
48	18738.13	19076.02	101803.22	98228.72	524218.36	533671.14	12
49	18766.70	19106.17	101808.87	98223.27	523391.16	532858.61	11
50	18795.27	19136.32	101814.53	98217.81	522566.47	532048.60	10
51	18823.84	19166.48	101820.20	98212.34	521744.28	531241.09	9
52	18852.41	19196.64	101825.88	98206.86	520924.59	530436.08	8
53	18880.98	19226.80	101831.57	98201.37	520107.38	529633.54	7
54	18909.54	19256.96	101837.27	98195.87	519292.64	528833.47	6
55	18938.11	19287.13	101842.98	98190.36	518480.35	528035.87	5
56	18966.67	19317.30	101848.70	98184.85	517670.51	527240.70	4
57	18995.23	19347.48	101854.43	98179.33	516863.11	526447.98	3
58	19023.79	19377.66	101860.17	98173.80	516058.13	525657.68	2
59	19052.34	19407.84	101865.92	98168.26	515255.57	524869.79	1
60	19080.90	19438.03	101871.68	98162.71	514455.40	524084.31	0

II	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	19080.90	19438.03	101871.68	98162.71	514455.40	524084.31	60
1	19109.45	19468.22	101877.44	98157.16	513657.63	523301.21	59
2	19138.00	19498.41	101883.21	98151.60	512862.24	522520.50	58
3	19166.55	19528.61	101888.99	98146.03	512069.21	521742.16	57
4	19195.10	19558.81	101894.78	98140.45	511278.55	520966.18	56
5	19223.65	19589.01	101900.58	98134.86	510490.24	520192.54	55
6	19252.20	19619.22	101906.39	98129.26	509704.26	519421.25	54
7	19280.74	19649.43	101912.21	98123.66	508920.61	518652.28	53
8	19309.28	19679.64	101918.04	98118.05	508139.28	517885.63	52
9	19337.82	19709.86	101923.88	98112.43	507360.25	517121.28	51
10	19366.36	19740.08	101929.73	98106.80	506583.52	516359.24	50
11	19394.90	19770.30	101935.59	98101.16	505809.07	515599.48	49
12	19423.44	19800.53	101941.46	98095.51	505036.90	514841.99	48
13	19451.97	19830.76	101947.34	98089.86	504267.00	514086.77	47
14	19480.50	19861.00	101953.23	98084.20	503499.35	513333.81	46
15	19509.03	19891.24	101959.12	98078.53	502733.95	512583.09	45
16	19537.56	19921.48	101965.02	98072.85	501970.78	511834.61	44
17	19566.09	19951.72	101970.93	98067.16	501209.84	511088.35	43
18	19594.61	19981.97	101976.85	98061.46	500451.11	510344.31	42
19	19623.14	20012.22	101982.78	98055.70	499694.59	509602.48	41
20	19651.66	20042.48	101988.72	98050.05	498940.27	508862.84	40
21	19680.18	20072.74	101994.67	98044.33	498188.13	508125.39	39
22	19708.70	20103.00	102000.63	98038.60	497438.17	507390.12	38
23	19737.22	20133.27	102006.60	98032.86	496690.37	506657.01	37
24	19765.73	20163.54	102012.58	98027.11	495944.74	505926.06	36
25	19794.25	20193.81	102018.57	98021.36	495201.25	505197.26	35
26	19822.76	20224.09	102024.57	98015.60	494459.90	504470.60	34
27	19851.27	20254.37	102030.58	98009.83	493720.68	503746.07	33
28	19879.78	20284.65	102036.60	98004.05	492983.58	503023.67	32
29	19908.29	20314.94	102042.63	97998.26	492248.59	502303.37	31
30	19936.79	20345.23	102048.67	97992.47	491515.70	501585.17	30
31	19965.30	20375.52	102054.71	97986.67	490784.91	500869.07	29
32	19993.80	20405.82	102060.76	97980.86	490056.20	500155.05	28
33	20022.30	20436.12	102066.82	97975.04	489329.56	499443.11	27
34	20050.80	20466.43	102072.89	97969.21	488604.99	498733.23	26
35	20079.30	20496.74	102078.97	97963.37	487882.48	498025.41	25
36	20107.79	20527.05	102085.06	97957.52	487162.01	497319.64	24
37	20136.29	20557.37	102091.16	97951.67	486443.59	496615.91	23
38	20164.78	20587.69	102097.27	97945.81	485727.19	495914.21	22
39	20193.27	20618.01	102103.39	97939.94	485012.82	495214.53	21
40	20221.76	20648.34	102109.52	97934.06	484300.45	494516.87	20
41	20250.24	20678.67	102115.66	97928.17	483590.10	493821.20	19
42	20278.73	20709.00	102121.81	97922.28	482881.74	493127.54	18
43	20307.21	20739.34	102127.97	97916.38	482175.36	492435.86	17
44	20335.69	20769.68	102134.14	97910.47	481470.96	491746.16	16
45	20364.17	20800.03	102140.32	97904.55	480768.54	491058.44	15
46	20392.65	20830.38	102146.50	97898.62	480068.08	490372.67	14
47	20421.13	20860.73	102152.69	97892.68	479369.57	489688.86	13
48	20449.61	20891.09	102158.89	97886.74	478673.00	489007.00	12
49	20478.08	20921.45	102165.10	97880.79	477978.37	488327.07	11
50	20506.55	20951.81	102171.32	97874.83	477285.67	487649.07	10
51	20535.02	20982.18	102177.55	97868.86	476594.90	486972.99	9
52	20563.49	21012.55	102183.79	97862.88	475906.03	486298.83	8
53	20591.95	21042.93	102190.04	97856.89	475219.07	485626.57	7
54	20620.42	21073.31	102196.30	97850.90	474534.01	484956.21	6
55	20648.88	21103.69	102202.57	97844.90	473850.83	484287.74	5
56	20677.34	21134.07	102208.85	97838.89	473169.54	483621.14	4
57	20705.80	21164.46	102215.14	97832.87	472490.12	482956.43	3
58	20734.26	21194.85	102221.44	97826.84	471812.56	482293.57	2
59	20762.71	21225.25	102227.75	97820.80	471136.86	481632.58	1
60	20791.17	21255.65	102234.07	97814.76	470463.01	480973.43	0

12	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	20791.17	21255.65	102234.07	97814.76	470463.01	480973.43	60
1	20819.62	21286.06	102240.40	97808.71	469791.00	480316.13	59
2	20848.07	21316.47	102246.73	97802.65	469120.83	479660.66	58
3	20876.52	21346.88	102253.07	97796.58	468452.48	479007.02	57
4	20904.97	21377.30	102259.42	97790.50	467785.95	478355.26	56
5	20933.41	21407.72	102265.78	97784.41	467121.24	477705.19	55
6	20961.86	21438.14	102272.15	97778.32	466458.32	477056.99	54
7	20990.30	21468.57	102278.53	97772.22	465797.21	476410.58	53
8	21018.74	21499.00	102284.92	97766.11	465137.88	475765.96	52
9	21047.18	21529.44	102291.32	97759.99	464480.34	475123.12	51
10	21075.61	21559.88	102297.73	97753.86	463824.57	474482.06	50
11	21104.05	21590.32	102304.15	97747.73	463170.56	473842.77	49
12	21132.48	21620.77	102310.58	97741.59	462518.32	473205.23	48
13	21160.91	21651.22	102317.02	97735.44	461867.83	472569.45	47
14	21189.34	21681.67	102323.47	97729.28	461219.08	471935.42	46
15	21217.77	21712.13	102329.93	97723.11	460572.07	471303.13	45
16	21246.19	21742.59	102336.40	97716.93	459926.80	470672.56	44
17	21274.62	21773.06	102342.88	97710.75	459283.25	470043.72	43
18	21303.04	21803.53	102349.37	97704.56	458641.41	469416.60	42
19	21331.46	21834.00	102355.87	97698.36	458001.29	468791.19	41
20	21359.88	21864.48	102362.38	97692.15	457362.87	468167.48	40
21	21388.29	21894.96	102368.90	97685.93	456726.14	467545.48	39
22	21416.71	21925.44	102375.43	97679.70	456091.11	466925.16	38
23	21445.12	21955.93	102381.96	97673.47	455457.76	466306.52	37
24	21473.53	21986.42	102388.50	97667.23	454826.08	465689.56	36
25	21501.94	22016.92	102395.05	97660.98	454196.08	465074.27	35
26	21530.35	22047.42	102401.61	97654.72	453567.73	464460.64	34
27	21558.76	22077.93	102408.18	97648.45	452941.05	463848.67	33
28	21587.16	22108.44	102414.76	97642.17	452316.01	463238.35	32
29	21615.56	22138.95	102421.35	97635.89	451692.61	462629.67	31
30	21643.96	22169.47	102427.95	97629.60	451070.85	462022.63	30
31	21672.36	22199.99	102434.56	97623.30	450450.72	461417.22	29
32	21700.76	22230.51	102441.18	97616.99	449832.21	460813.43	28
33	21729.15	22261.04	102447.81	97610.67	449215.32	460211.26	27
34	21757.54	22291.57	102454.45	97604.35	448600.04	459610.70	26
35	21785.93	22322.11	102461.10	97598.02	447986.36	459011.74	25
36	21814.32	22352.65	102467.76	97591.68	447374.28	458414.39	24
37	21842.71	22383.19	102474.43	97585.33	446763.79	457818.62	23
38	21871.10	22413.74	102481.11	97578.97	446154.89	457224.44	22
39	21899.48	22444.29	102487.80	97572.60	445547.56	456631.83	21
40	21927.86	22474.85	102494.49	97566.23	444941.81	456040.80	20
41	21956.24	22505.41	102501.19	97559.85	444337.62	455451.34	19
42	21984.62	22535.97	102507.90	97553.46	443734.99	454863.44	18
43	22013.00	22566.54	102514.62	97547.06	443133.92	454277.09	17
44	22041.37	22597.11	102521.35	97540.65	442534.39	453692.29	16
45	22069.74	22627.69	102528.09	97534.23	441936.41	453109.03	15
46	22098.11	22658.27	102534.84	97527.81	441339.96	452527.30	14
47	22126.48	22688.85	102541.60	97521.38	440745.04	451947.11	13
48	22154.85	22719.44	102548.37	97514.94	440151.64	451368.44	12
49	22183.21	22750.03	102555.15	97508.49	439559.76	450791.29	11
50	22211.58	22780.63	102561.94	97502.03	438969.40	450215.65	10
51	22239.94	22811.23	102568.74	97495.56	438380.54	449641.52	9
52	22268.30	22841.83	102575.55	97489.09	437793.17	449068.89	8
53	22296.66	22872.44	102582.37	97482.61	437207.31	448497.75	7
54	22325.01	22903.05	102589.20	97476.12	436622.93	447928.10	6
55	22353.37	22933.67	102596.04	97469.62	436040.03	447359.93	5
56	22381.72	22964.29	102602.89	97463.11	435458.61	446793.24	4
57	22410.07	22994.92	102609.75	97456.60	434878.66	446228.03	3
58	22438.41	23025.55	102616.62	97450.08	434300.18	445664.28	2
59	22466.76	23056.18	102623.50	97443.55	433723.16	445101.98	1
60	22495.11	23086.82	102630.39	97437.01	433147.59	444541.15	0

13	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	22495.11	23086.82	102630.39	97437.01	433147.59	444541.13	60
1	22523.45	23117.46	102637.29	97430.46	432573.47	443981.76	59
2	22551.79	23148.11	102644.20	97423.90	432000.79	443423.82	58
3	22580.13	23178.76	102651.12	97417.34	431429.55	442867.31	57
4	22608.46	23209.41	102658.05	97410.77	430859.74	442312.24	56
5	22636.80	23240.07	102664.99	97404.19	430291.36	441758.59	55
6	22665.13	23270.73	102671.94	97397.60	429724.40	441206.37	54
7	22693.46	23301.40	102678.90	97391.00	429158.85	440655.56	53
8	22721.79	23332.07	102685.87	97384.39	428594.72	440106.16	52
9	22750.12	23362.74	102692.84	97377.78	428031.99	439558.17	51
10	22778.44	23393.42	102699.82	97371.16	427470.66	439011.58	50
11	22806.77	23424.10	102706.81	97364.53	426910.72	438466.38	49
12	22835.09	23454.79	102713.81	97357.89	426352.18	437922.57	48
13	22863.41	23485.48	102720.82	97351.24	425795.01	437380.15	47
14	22891.72	23516.17	102727.84	97344.58	425239.23	436839.10	46
15	22920.04	23546.87	102734.87	97337.92	424684.82	436299.43	45
16	22948.35	23577.58	102741.91	97331.25	424131.77	435761.13	44
17	22976.66	23608.29	102748.96	97324.57	423580.09	435224.19	43
18	23004.97	23639.00	102756.02	97317.88	423029.77	434688.61	42
19	23033.28	23669.72	102763.09	97311.18	422480.80	434154.38	41
20	23061.59	23700.44	102770.17	97304.48	421933.18	433621.50	40
21	23089.89	23731.16	102777.26	97297.77	421386.90	433089.96	39
22	23118.19	23761.89	102784.36	97291.05	420841.96	432559.77	38
23	23146.49	23792.62	102791.47	97284.32	420298.35	432030.90	37
24	23174.79	23823.36	102798.59	97277.58	419756.06	431503.36	36
25	23203.09	23854.10	102805.72	97270.84	419215.10	430977.15	35
26	23231.38	23884.85	102812.86	97264.09	418675.46	430452.25	34
27	23259.67	23915.60	102820.01	97257.33	418137.15	429928.67	33
28	23287.96	23946.35	102827.17	97250.56	417600.11	429406.40	32
29	23316.25	23977.11	102834.34	97243.78	417064.40	428885.43	31
30	23344.54	24007.87	102841.52	97236.99	416529.98	428365.76	30
31	23372.82	24038.64	102848.71	97230.19	415996.85	427847.38	29
32	23401.10	24069.41	102855.91	97223.39	415465.01	427330.29	28
33	23429.38	24100.19	102863.12	97216.58	414934.46	426814.49	27
34	23457.66	24130.97	102870.34	97209.76	414405.19	426299.96	26
35	23485.94	24161.76	102877.57	97202.93	413877.19	425786.71	25
36	23514.21	24192.55	102884.81	97196.09	413350.46	425274.74	24
37	23542.48	24223.34	102892.06	97189.25	412824.99	424764.02	23
38	23570.75	24254.14	102899.32	97182.40	412300.79	424254.57	22
39	23599.02	24284.94	102906.58	97175.54	411777.84	423746.37	21
40	23627.29	24315.75	102913.85	97168.67	411256.14	423239.43	20
41	23655.55	24346.56	102921.13	97161.79	410735.69	422733.73	19
42	23683.81	24377.37	102928.42	97154.91	410216.49	422229.28	18
43	23712.07	24408.19	102935.72	97148.02	409698.52	421726.06	17
44	23740.33	24439.01	102943.03	97141.12	409181.78	421224.08	16
45	23768.59	24469.84	102950.35	97134.21	408666.27	420723.33	15
46	23796.84	24500.67	102957.68	97127.29	408151.99	420223.80	14
47	23825.10	24531.51	102965.02	97120.36	407638.92	419725.49	13
48	23853.35	24562.35	102972.37	97113.43	407127.07	419228.40	12
49	23881.59	24593.20	102979.73	97106.49	406616.43	418732.52	11
50	23909.84	24624.05	102987.10	97099.54	406107.00	418237.85	10
51	23938.08	24654.91	102994.48	97092.58	405598.77	417744.38	9
52	23966.33	24685.77	103001.87	97085.61	405091.74	417252.10	8
53	23994.57	24716.63	103008.27	97078.63	404585.90	416761.02	7
54	24022.80	24747.50	103016.68	97071.65	404081.25	416271.14	6
55	24051.04	24778.37	103024.10	97064.66	403577.79	415782.43	5
56	24079.27	24809.25	103031.53	97057.66	403075.50	415294.91	4
57	24107.51	24840.13	103038.97	97050.65	402574.40	414808.56	3
58	24135.74	24871.02	103046.42	97043.63	402074.46	414323.39	2
59	24163.96	24901.91	103053.88	97036.60	401575.70	413839.39	1
60	24192.19	24932.80	103061.35	97029.57	401078.09	413356.55	0

14	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	24192.19	24932.80	103061.35	97029.57	401078.09	413356.55	60
1	24220.41	24963.70	103068.83	97022.53	400581.65	412874.87	59
2	24248.63	24994.60	103076.32	97015.48	400086.36	412394.35	58
3	24276.85	25025.51	103083.82	97008.42	399592.23	411914.98	57
4	24305.07	25056.42	103091.33	97001.35	399099.24	411436.75	56
5	24333.29	25087.34	103098.85	96994.28	398607.39	410959.67	55
6	24361.50	25118.26	103106.38	96987.20	398116.69	410483.74	54
7	24389.71	25149.19	103113.92	96980.11	397627.12	410008.93	53
8	24417.92	25180.12	103121.47	96973.01	397138.68	409535.26	52
9	24446.13	25211.06	103129.03	96965.90	396651.37	409062.72	51
10	24474.33	25242.00	103136.60	96958.79	396165.18	408591.30	50
11	24502.54	25272.94	103144.18	96951.67	395680.11	408121.00	49
12	24530.74	25303.89	103151.77	96944.54	395196.15	407651.81	48
13	24558.94	25334.84	103159.36	96937.40	394713.31	407183.74	47
14	24587.13	25365.80	103166.97	96930.25	394231.57	406716.77	46
15	24615.33	25396.76	103174.59	96923.09	393750.94	406250.91	45
16	24643.52	25427.73	103182.22	96915.92	393271.41	405786.15	44
17	24671.71	25458.70	103189.85	96908.75	392792.97	405322.49	43
18	24699.90	25489.68	103197.50	96901.57	392315.63	404859.92	42
19	24728.09	25520.66	103205.16	96894.38	391839.37	404398.44	41
20	24756.27	25551.65	103212.82	96887.18	391364.20	403938.04	40
21	24784.45	25582.64	103220.50	96879.98	390890.11	403478.72	39
22	24812.63	25613.63	103228.18	96872.77	390417.10	403020.48	38
23	24840.81	25644.63	103235.88	96865.55	389945.16	402563.32	37
24	24868.99	25675.63	103243.59	96858.32	389474.29	402107.22	36
25	24897.16	25706.64	103251.30	96851.08	389004.48	401652.19	35
26	24925.33	25737.66	103259.03	96843.83	388535.74	401198.23	34
27	24953.50	25768.68	103266.76	96846.57	388068.05	400745.32	33
28	24981.67	25799.70	103274.51	96839.31	387601.42	400293.47	32
29	25009.84	25830.73	103282.27	96832.04	387135.84	399842.67	31
30	25038.00	25861.76	103290.03	96824.76	386671.31	399392.92	30
31	25066.16	25892.80	103297.81	96817.47	386207.82	398944.21	29
32	25094.32	25923.84	103305.59	96810.18	385745.37	398496.54	28
33	25122.48	25954.88	103313.39	96802.88	385283.96	398049.91	27
34	25150.63	25985.93	103321.19	96795.57	384823.58	397604.31	26
35	25178.79	26016.99	103329.01	96788.25	384364.24	397159.75	25
36	25206.94	26048.05	103336.83	96780.92	383905.91	396716.21	24
37	25235.08	26079.11	103344.67	96773.58	383448.61	396273.69	23
38	25263.23	26110.18	103352.51	96766.23	382992.33	395832.19	22
39	25291.37	26141.26	103360.37	96758.88	382537.07	395391.71	21
40	25319.52	26172.34	103368.23	96751.52	382082.81	394952.24	20
41	25347.66	26203.42	103376.11	96744.15	381629.57	394513.79	19
42	25375.79	26234.51	103383.99	96736.77	381177.33	394076.33	18
43	25403.93	26265.60	103391.88	96729.38	380726.09	393639.88	17
44	25432.06	26296.70	103399.79	96721.99	380275.85	393204.43	16
45	25460.19	26327.80	103407.70	96714.59	379826.61	392769.97	15
46	25488.32	26358.91	103415.63	96707.18	379378.35	392336.51	14
47	25516.45	26390.02	103423.56	96707.76	378931.09	391904.03	13
48	25544.58	26421.14	103431.51	96708.33	378484.81	391472.54	12
49	25572.70	26452.26	103439.46	96708.90	378039.51	391042.03	11
50	25600.82	26483.39	103447.43	96709.46	377595.19	390612.50	10
51	25628.94	26514.52	103455.40	96710.01	377151.85	390183.95	9
52	25657.05	26545.66	103463.38	96710.55	376709.47	389756.37	8
53	25685.17	26576.80	103471.38	96711.08	376268.07	389329.76	7
54	25713.28	26607.94	103479.38	96711.60	375827.63	388904.11	6
55	25741.39	26639.09	103487.40	96712.12	375388.15	388479.43	5
56	25769.50	26670.25	103495.42	96712.63	374949.63	388055.70	4
57	25797.60	26701.41	103503.46	96713.13	374512.07	387632.93	3
58	25825.70	26732.57	103511.50	96713.62	374075.46	387211.12	2
59	25853.81	26763.74	103519.55	96714.10	373639.80	386790.25	1
60	25881.90	26794.92	103527.62	96714.58	373205.08	386370.33	0

15	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	25881.90	26794.92	103527.62	96592.58	373205.08	386370.33	60
1	25910.00	26826.10	103535.69	96585.05	372771.31	385951.35	59
2	25938.10	26857.28	103543.78	96577.51	372338.47	385533.32	58
3	25966.19	26888.47	103551.87	96569.96	371906.58	385116.22	57
4	25994.28	26919.67	103559.98	96562.40	371475.61	384700.05	56
5	26022.37	26950.87	103568.09	96554.83	371045.58	384284.82	55
6	26050.45	26982.07	103576.21	96547.26	370616.48	383870.51	54
7	26078.53	27013.28	103584.35	96539.68	370188.30	383457.13	53
8	26106.61	27044.49	103592.49	96532.09	369761.05	383044.67	52
9	26134.69	27075.71	103600.65	96524.49	369334.69	382633.13	51
10	26162.77	27106.93	103608.81	96516.88	368909.27	382222.51	50
11	26190.85	27138.16	103616.99	96509.27	368484.75	381812.80	49
12	26218.92	27169.40	103625.17	96501.65	368061.15	381403.99	48
13	26246.99	27200.64	103633.37	96494.02	367638.45	380996.10	47
14	26275.06	27231.88	103641.57	96486.38	367216.65	380589.11	46
15	26303.12	27263.13	103649.79	96478.73	366795.75	380183.01	45
16	26331.18	27294.38	103658.01	96471.07	366375.75	379777.82	44
17	26359.24	27325.64	103666.25	96463.41	365956.65	379373.52	43
18	26387.30	27356.90	103674.49	96455.74	365538.44	378970.11	42
19	26415.36	27388.17	103682.75	96448.06	365121.11	378567.60	41
20	26443.42	27419.44	103691.01	96440.37	364704.67	378165.96	40
21	26471.47	27450.72	103699.29	96432.67	364289.11	377765.22	39
22	26499.52	27482.01	103707.57	96424.97	363874.44	377365.35	38
23	26527.57	27513.30	103715.87	96417.26	363460.64	376966.36	37
24	26555.61	27544.59	103724.17	96409.54	363047.71	376568.24	36
25	26583.65	27575.89	103732.49	96401.81	362635.66	376171.00	35
26	26611.69	27607.19	103740.82	96394.07	362224.47	375774.62	34
27	26639.73	27638.50	103749.15	96386.33	361814.15	375379.11	33
28	26667.77	27669.81	103757.50	96378.58	361404.69	374984.47	32
29	26695.81	27701.13	103765.85	96370.82	360996.09	374590.68	31
30	26723.84	27732.45	103774.22	96363.05	360588.35	374197.75	30
31	26751.87	27763.78	103782.60	96355.27	360181.46	373805.68	29
32	26779.89	27795.12	103790.98	96347.48	359775.43	373414.46	28
33	26807.92	27826.46	103799.38	96339.69	359370.24	373024.09	27
34	26835.94	27857.80	103807.79	96331.89	358965.90	372634.57	26
35	26863.96	27889.15	103816.21	96324.08	358562.41	372245.89	25
36	26891.98	27920.50	103824.63	96316.26	358159.75	371858.05	24
37	26920.00	27951.86	103833.07	96308.43	357757.94	371471.05	23
38	26948.01	27983.22	103841.52	96300.59	357356.96	371084.89	22
39	26976.02	28014.59	103849.98	96292.75	356956.81	370699.56	21
40	27004.03	28045.97	103858.44	96284.90	356557.49	370315.06	20
41	27032.04	28077.35	103866.92	96277.04	356159.00	369931.39	19
42	27060.04	28108.73	103875.41	96269.17	355761.33	369548.54	18
43	27088.05	28140.12	103883.91	96261.30	355364.49	369166.52	17
44	27116.05	28171.52	103892.42	96253.42	354968.46	368785.32	16
45	27144.04	28202.92	103900.94	96245.53	354573.25	368404.93	15
46	27172.04	28234.32	103909.47	96237.63	354178.86	368025.36	14
47	27200.03	28265.73	103918.00	96229.72	353785.28	367646.60	13
48	27228.02	28297.15	103926.55	96221.80	353392.51	367268.65	12
49	27256.01	28328.57	103935.11	96213.87	353000.54	366891.51	11
50	27284.00	28359.99	103943.68	96205.94	352609.38	366515.18	10
51	27311.98	28391.42	103952.26	96198.00	352219.02	366139.64	9
52	27339.96	28422.86	103960.85	96190.05	351829.46	365764.91	8
53	27367.94	28454.30	103969.45	96182.09	351440.70	365390.97	7
54	27395.92	28485.75	103978.06	96174.13	351052.73	365017.83	6
55	27423.90	28517.20	103986.69	96166.16	350665.55	364645.48	5
56	27451.87	28548.66	103995.32	96158.18	350279.16	364273.92	4
57	27479.84	28580.12	104003.96	96150.19	349893.56	363903.15	3
58	27507.81	28611.59	104012.61	96142.19	349508.74	363533.16	2
59	27535.78	28643.06	104021.27	96134.18	349124.70	363163.95	1
60	27563.74	28674.54	104029.94	96126.17	348741.44	362795.53	0

16	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	27563.74	28674.54	104029.94	96126.17	348741.44	362795.53	60
1	27591.70	28706.02	104038.63	96118.15	348358.96	362427.88	59
2	27619.65	28737.51	104047.32	96110.12	347977.26	362061.01	58
3	27647.61	28769.00	104056.02	96102.08	347596.32	361694.90	57
4	27675.56	28800.50	104064.73	96094.03	347216.16	361329.57	56
5	27703.52	28832.01	104073.46	96085.98	346836.76	360965.01	55
6	27731.47	28863.52	104082.19	96077.92	346458.13	360601.21	54
7	27759.41	28895.03	104090.94	96069.85	346080.26	360238.18	53
8	27787.36	28926.55	104099.69	96061.77	345703.15	359875.90	52
9	27815.30	28958.08	104108.45	96053.68	345326.79	359514.39	51
10	27843.24	28989.61	104117.23	96045.58	344951.20	359153.63	50
11	27871.18	29021.14	104126.01	96037.48	344576.35	358793.62	49
12	27899.11	29052.68	104134.81	96029.37	344202.26	358434.37	48
13	27927.04	29084.23	104143.62	96021.25	343828.91	358075.86	47
14	27954.97	29115.78	104152.43	96013.12	343456.31	357718.10	46
15	27982.90	29147.34	104161.26	96004.98	343084.46	357361.08	45
16	28010.83	29178.90	104170.09	95996.84	342713.34	357004.81	44
17	28038.75	29210.47	104178.94	95988.69	342342.97	356649.28	43
18	28066.67	29242.05	104187.80	95980.53	341973.33	356294.48	42
19	28094.59	29273.63	104196.67	95972.36	341604.43	355940.42	41
20	28122.51	29305.21	104205.54	95964.18	341236.26	355587.10	40
21	28150.42	29336.80	104214.43	95956.00	340868.82	355234.50	39
22	28178.33	29368.39	104223.33	95947.81	340502.10	354882.63	38
23	28206.24	29399.99	104232.24	95939.61	340136.12	354531.49	37
24	28234.15	29431.60	104241.16	95931.40	339770.85	354181.07	36
25	28262.05	29463.21	104250.09	95923.18	339406.31	353831.38	35
26	28289.95	29494.83	104259.03	95914.95	339042.49	353482.40	34
27	28317.85	29526.45	104267.98	95906.72	338679.38	353134.14	33
28	28345.75	29558.08	104276.94	95898.48	338316.99	352786.60	32
29	28373.64	29589.71	104285.91	95890.23	337955.31	352439.77	31
30	28401.53	29621.35	104294.89	95881.97	337594.34	352093.65	30
31	28429.42	29652.99	104303.88	95873.70	337234.08	351748.24	29
32	28457.31	29684.64	104312.89	95865.43	336874.53	351403.54	28
33	28485.20	29716.30	104321.90	95857.15	336515.68	351059.54	27
34	28513.08	29747.96	104330.92	95848.86	336157.53	350716.25	26
35	28540.96	29779.62	104339.95	95840.56	335800.08	350373.65	25
36	28568.84	29811.29	104349.00	95832.25	335443.33	350031.75	24
37	28596.71	29842.97	104358.05	95823.94	335087.28	349690.55	23
38	28624.58	29874.65	104367.12	95815.62	334731.91	349350.04	22
39	28652.45	29906.34	104376.19	95807.29	334377.24	349010.23	21
40	28680.32	29938.03	104385.28	95798.95	334023.26	348671.10	20
41	28708.19	29969.73	104394.37	95790.60	333669.97	348332.67	19
42	28736.05	30001.44	104403.48	95782.25	333317.36	347994.92	18
43	28763.91	30033.15	104412.59	95773.89	332965.43	347657.85	17
44	28791.77	30064.86	104421.72	95765.52	332614.19	347321.46	16
45	28819.63	30096.58	104430.86	95757.14	332263.62	346985.76	15
46	28847.48	30128.31	104440.01	95748.75	331913.73	346650.73	14
47	28875.33	30160.04	104449.17	95740.35	331564.52	346316.37	13
48	28903.18	30191.78	104458.33	95731.95	331215.98	345982.69	12
49	28931.03	30223.52	104467.51	95723.54	330868.11	345649.69	11
50	28958.87	30255.27	104476.70	95715.12	330520.91	345317.35	10
51	28986.71	30287.03	104485.90	95706.69	330174.38	344985.68	9
52	29014.55	30318.79	104495.11	95698.25	329828.51	344654.67	8
53	29042.39	30350.55	104504.33	95689.81	329483.30	344324.33	7
54	29070.22	30382.32	104513.57	95681.36	329138.76	343994.65	6
55	29098.05	30414.10	104522.81	95672.90	328794.87	343665.63	5
56	29125.88	30445.88	104532.06	95664.43	328451.64	343337.27	4
57	29153.71	30477.67	104541.32	95655.95	328109.07	343009.56	3
58	29181.53	30509.46	104550.60	95647.47	327767.15	342682.51	2
59	29209.35	30541.26	104559.88	95638.98	327425.88	342356.11	1
60	29237.17	30573.07	104569.18	95630.48	327085.26	342030.36	0

17	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	29237.17	30573.07	104569.18		95630.48	327085.26	342050.36	60
1	29264.99	30604.88	104578.48		95621.97	326745.29	341705.26	59
2	29292.80	30636.69	104587.80		95613.45	326405.96	341380.80	58
3	29320.61	30668.51	104597.12		95604.92	326067.28	341056.99	57
4	29348.42	30700.34	104606.46		95596.39	325729.24	340733.82	56
5	29376.23	30732.18	104615.81		95587.85	325391.84	340411.30	55
6	29404.03	30764.02	104625.16		95579.30	325055.08	340089.41	54
7	29431.83	30795.86	104634.53		95570.74	324718.95	339768.16	53
8	29459.63	30827.71	104643.91		95562.17	324383.46	339447.54	52
9	29487.43	30859.57	104653.30		95553.60	324048.60	339127.55	51
10	29515.22	30891.43	104662.70		95545.02	323714.38	338808.20	50
11	29543.01	30923.30	104672.11		95536.43	323380.78	338489.48	49
12	29570.80	30955.17	104681.53		95527.83	323047.80	338171.58	48
13	29598.59	30987.05	104690.96		95519.22	322715.46	337853.91	47
14	29626.38	31018.93	104700.40		95510.61	322383.73	337537.07	46
15	29654.16	31050.82	104709.86		95501.99	322052.63	337220.84	45
16	29681.94	31082.72	104719.32		95493.36	321722.15	336905.24	44
17	29709.71	31114.62	104728.79		95484.72	321392.28	336590.26	43
18	29737.49	31146.53	104738.28		95476.07	321063.04	336275.89	42
19	29765.26	31178.44	104747.77		95467.42	320734.40	335962.14	41
20	29793.03	31210.36	104757.28		95458.76	320406.38	335649.00	40
21	29820.79	31242.29	104766.79		95450.09	320078.97	335336.47	39
22	29848.56	31274.22	104776.32		95441.41	319752.17	335024.55	38
23	29876.32	31306.16	104785.86		95432.72	319425.98	334713.24	37
24	29904.08	31338.10	104795.40		95424.03	319100.39	334402.54	36
25	29931.84	31370.05	104804.96		95415.33	318775.40	334092.44	35
26	29959.59	31402.00	104814.53		95406.62	318451.02	333782.94	34
27	29987.34	31433.96	104824.11		95397.90	318127.24	333474.05	33
28	30015.09	31465.93	104833.70		95389.17	317804.06	333165.75	32
29	30042.84	31497.90	104843.30		95380.43	317481.47	332858.05	31
30	30070.58	31529.88	104852.91		95371.69	317159.48	332550.95	30
31	30098.32	31561.86	104862.53		95362.94	316838.08	332244.44	29
32	30126.06	31593.85	104872.17		95354.18	316517.28	331938.53	28
33	30153.80	31625.85	104881.81		95345.41	316197.06	331633.20	27
34	30181.53	31657.85	104891.46		95336.64	315877.44	331328.47	26
35	30209.26	31689.86	104901.13		95327.86	315558.40	331024.32	25
36	30236.99	31721.87	104910.80		95319.07	315239.94	330720.76	24
37	30264.71	31753.89	104920.49		95310.27	314922.07	330417.78	23
38	30292.44	31785.91	104930.19		95301.46	314604.78	330115.39	22
39	30320.16	31817.94	104939.89		95292.64	314288.07	329813.57	21
40	30347.88	31849.98	104949.61		95283.82	313971.94	329512.34	20
41	30375.59	31882.02	104959.34		95274.99	313656.39	329211.68	19
42	30403.31	31914.07	104969.08		95266.15	313341.41	328911.60	18
43	30431.02	31946.13	104978.83		95257.30	313027.01	328612.09	17
44	30458.72	31978.19	104988.59		95248.44	312713.17	328313.16	16
45	30486.43	32010.25	104998.36		95239.58	312399.91	328014.79	15
46	30514.13	32042.32	105008.15		95230.71	312087.22	327717.00	14
47	30541.83	32074.40	105017.94		95221.83	311775.09	327419.77	13
48	30569.53	32106.49	105027.74		95212.94	311463.53	327123.11	12
49	30597.23	32138.58	105037.56		95204.04	311152.54	326827.02	11
50	30624.92	32170.67	105047.38		95195.14	310842.10	326531.49	10
51	30652.61	32202.77	105057.22		95186.23	310532.23	326236.52	9
52	30680.29	32234.88	105067.06		95177.31	310222.91	325942.11	8
53	30707.98	32267.00	105076.92		95168.38	309914.16	325648.25	7
54	30735.66	32299.12	105086.79		95159.44	309605.96	325354.96	6
55	30763.34	32331.25	105096.67		95150.49	309298.31	325062.22	5
56	30791.02	32363.38	105106.56		95141.54	308991.22	324770.03	4
57	30818.69	32395.52	105116.46		95132.58	308684.68	324478.40	3
58	30846.36	32427.66	105126.37		95123.61	308378.69	324187.32	2
59	30874.03	32459.81	105136.29		95114.63	308073.25	323896.78	1
60	30901.70	32491.97	105146.22		95105.65	307768.35	323606.80	0

18	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	30901.70	32491.97	105146.22		95105.65	307768.35	323606.80	60
1	30929.36	32524.13	105156.17		95096.66	307464.00	323317.36	59
2	30957.02	32556.30	105166.12		95087.66	307160.20	323028.46	58
3	30984.68	32588.48	105176.08		95078.65	306856.93	322740.11	57
4	31012.34	32620.66	105186.06		95069.63	306554.21	322452.30	56
5	31039.99	32652.85	105196.05		95060.60	306252.03	322165.03	55
6	31067.64	32685.04	105206.04		95051.57	305950.38	321878.30	54
7	31095.29	32717.24	105216.03		95042.53	305649.28	321592.10	53
8	31122.94	32749.44	105226.07		95033.48	305348.70	321306.44	52
9	31150.58	32781.65	105236.10		95024.42	305048.66	321021.32	51
10	31178.22	32813.87	105246.14		95015.36	304749.15	320736.73	50
11	31205.86	32846.10	105256.19		95006.29	304450.18	320452.66	49
12	31233.49	32878.33	105266.25		94997.21	304151.73	320169.13	48
13	31261.12	32910.56	105276.33		94988.12	303853.81	319886.13	47
14	31288.75	32942.80	105286.41		94979.02	303556.41	319603.65	46
15	31316.38	32975.05	105296.51		94969.91	303259.54	319321.70	45
16	31344.00	33007.31	105306.61		94960.80	302963.20	319040.28	44
17	31371.63	33039.57	105316.73		94951.68	302667.37	318759.37	43
18	31399.25	33071.84	105326.86		94942.55	302372.07	318478.99	42
19	31426.86	33104.11	105336.99		94933.41	302077.28	318199.13	41
20	31454.48	33136.39	105347.14		94924.26	301783.01	317919.78	40
21	31482.09	33168.68	105357.30		94915.11	301489.26	317640.95	39
22	31509.69	33200.97	105367.47		94905.95	301196.02	317362.64	38
23	31537.30	33233.27	105377.65		94896.78	300903.30	317084.84	37
24	31564.90	33265.57	105387.85		94887.60	300611.09	316807.56	36
25	31592.50	33297.88	105398.05		94878.41	300319.39	316530.78	35
26	31620.10	33330.20	105408.26		94869.22	300028.20	316254.52	34
27	31647.70	33362.52	105418.49		94860.02	299737.51	315978.76	33
28	31675.29	33394.85	105428.73		94850.81	299447.34	315703.51	32
29	31702.88	33427.19	105438.97		94841.59	299157.66	315428.77	31
30	31730.47	33459.53	105449.23		94832.36	298868.50	315154.53	30
31	31758.05	33491.88	105459.50		94823.13	298579.83	314880.79	29
32	31785.63	33524.24	105469.78		94813.89	298291.66	314607.56	28
33	31813.21	33556.60	105480.07		94804.64	298004.00	314334.83	27
34	31840.79	33588.97	105490.37		94795.38	297716.83	314062.59	26
35	31868.36	33621.34	105500.68		94786.11	297430.16	313790.86	25
36	31895.93	33653.72	105511.01		94776.84	297143.99	313519.62	24
37	31923.50	33686.11	105521.34		94767.56	296858.31	313248.87	23
38	31951.06	33718.50	105531.69		94758.27	296573.12	312978.62	22
39	31978.63	33750.90	105542.04		94748.97	296288.42	312708.86	21
40	32006.19	33783.30	105552.41		94739.66	296004.22	312439.59	20
41	32033.74	33815.71	105562.79		94730.35	295720.50	312170.81	19
42	32061.30	33848.13	105573.18		94721.03	295437.27	311902.52	18
43	32088.85	33880.56	105583.58		94711.70	295154.53	311634.72	17
44	32116.40	33912.99	105593.99		94702.36	294872.27	311367.40	16
45	32143.95	33945.43	105604.41		94693.01	294590.50	311100.57	15
46	32171.49	33977.87	105614.85		94683.66	294309.21	310834.22	14
47	32199.03	34010.32	105625.29		94674.30	294028.40	310568.35	13
48	32226.57	34042.78	105635.75		94664.93	293748.07	310302.96	12
49	32254.10	34075.24	105646.21		94655.55	293468.22	310038.05	11
50	32281.64	34107.71	105656.69		94646.16	293188.85	309773.63	10
51	32309.17	34140.19	105667.18		94636.76	292909.95	309509.67	9
52	32336.70	34172.67	105677.68		94627.36	292631.52	309246.20	8
53	32364.22	34205.16	105688.19		94617.95	292353.58	308983.19	7
54	32391.74	34237.65	105698.71		94608.53	292076.10	308720.66	6
55	32419.26	34270.15	105709.24		94599.10	291799.09	308458.60	5
56	32446.78	34302.66	105719.78		94589.67	291522.56	308197.02	4
57	32474.29	34335.18	105730.34		94580.23	291246.49	307935.90	3
58	32501.80	34367.70	105740.90		94570.78	290970.89	307675.25	2
59	32529.31	34400.23	105751.48		94561.32	290695.76	307415.07	1
60	32556.82	34432.76	105762.07		94551.85	290421.09	307155.35	0

19	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	32556.82	34432.76	105762.07		94551.85	290421.09	307155.35	60
1	32584.32	34465.50	105772.67		94542.38	290146.88	306896.10	59
2	32611.82	34497.85	105783.28		94532.90	289873.14	306637.31	58
3	32639.31	34530.40	105793.90		94523.41	289599.86	306378.98	57
4	32666.81	34562.96	105804.53		94513.91	289327.04	306121.11	56
5	32694.30	34595.53	105815.17		94504.40	289054.67	305863.70	55
6	32721.79	34628.10	105825.83		94494.89	288782.77	305606.75	54
7	32749.28	34660.68	105836.49		94485.37	288511.32	305350.26	53
8	32776.76	34693.27	105847.17		94475.84	288240.33	305094.23	52
9	32804.24	34725.86	105857.86		94466.30	287969.79	304838.64	51
10	32831.72	34758.46	105868.55		94456.75	287699.70	304583.52	50
11	32859.19	34791.07	105879.26		94447.20	287430.07	304328.84	49
12	32886.66	34823.68	105889.99		94437.64	287160.88	304074.62	48
13	32914.13	34856.30	105900.72		94428.07	286892.15	303820.84	47
14	32941.60	34888.93	105911.46		94418.49	286623.86	303567.52	46
15	32969.06	34921.56	105922.21		94408.90	286356.02	303314.64	45
16	32996.52	34954.20	105932.98		94399.31	286088.63	303062.21	44
17	33023.98	34986.85	105943.76		94389.71	285821.68	302810.23	43
18	33051.44	35019.50	105954.54		94380.10	285555.17	302558.68	42
19	33078.89	35052.16	105965.34		94370.48	285289.11	302307.59	41
20	33106.34	35084.83	105976.15		94360.85	285023.49	302056.93	40
21	33133.79	35117.50	105986.97		94351.21	284758.31	301806.72	39
22	33161.23	35150.18	105997.81		94341.57	284493.56	301556.94	38
23	33188.67	35182.87	106008.65		94331.92	284229.26	301307.60	37
24	33216.11	35215.56	106019.51		84322.26	283965.39	301058.70	36
25	33243.55	35248.26	106030.37		94312.60	283701.96	300810.24	35
26	33270.98	35280.97	106041.25		94302.93	283438.96	300562.21	34
27	33298.41	35313.68	106052.14		94293.25	283176.39	300314.62	33
28	33325.84	35346.40	106063.04		94283.56	282914.26	300067.46	32
29	33353.27	35379.13	106073.95		94273.86	282652.56	299820.73	31
30	33380.69	35411.86	106084.87		94264.15	282391.29	299574.43	30
31	33408.10	35444.60	106095.80		94254.43	282130.45	299328.56	29
32	33435.52	35477.35	106106.75		94244.71	281870.03	299083.12	28
33	33462.93	35510.10	106117.70		94234.98	281610.04	298838.11	27
34	33490.34	35542.86	106128.67		94225.24	281350.48	298593.52	26
35	33517.75	35575.63	106139.65		94215.50	281091.34	298349.36	25
36	33545.16	35608.40	106150.64		94205.75	280832.63	298105.63	24
37	33572.56	35641.18	106161.64		94195.99	280574.33	297862.31	23
38	33599.96	35673.97	106172.65		94186.22	280316.46	297619.42	22
39	33627.35	35706.76	106183.67		94176.44	280059.01	297376.95	21
40	33654.75	35739.56	106194.71		94166.65	279801.98	297134.90	20
41	33682.14	35772.37	106205.75		94156.85	279545.37	296893.27	19
42	33709.53	35805.18	106216.81		94147.05	279289.17	296652.05	18
43	33736.91	35838.00	106227.88		94137.24	279033.39	296411.25	17
44	33764.29	35870.83	106238.96		94127.42	278778.02	296170.87	16
45	33791.67	35903.67	106250.05		94117.60	278523.07	295930.90	15
46	33819.05	35936.51	106261.15		94107.77	278268.53	295691.35	14
47	33846.42	35969.36	106272.27		94097.93	278014.40	295452.21	13
48	33873.79	36002.22	106283.39		94088.08	277760.69	295213.48	12
49	33901.16	36035.08	106294.53		94078.22	277507.38	294975.16	11
50	33928.53	36067.95	106305.68		94068.35	277254.48	294737.25	10
51	33955.89	36100.83	106316.84		94058.48	277001.99	294499.75	9
52	33983.25	36133.71	106328.01		94048.60	276749.90	294262.65	8
53	34010.60	36166.60	106339.19		94038.71	276498.22	294025.97	7
54	34037.95	36199.50	106350.38		94028.81	276246.95	293789.68	6
55	34065.30	36232.40	106361.58		94018.90	275996.08	293553.80	5
56	34092.65	36265.31	106372.80		94008.99	275745.61	293318.33	4
57	34120.00	36298.23	106384.03		93999.07	275495.54	293083.26	3
58	34147.34	36331.15	106395.27		93989.14	275245.88	292848.58	2
59	34174.68	36364.08	106406.52		93979.20	274996.61	292614.31	1
60	34202.02	36397.02	106417.78		93969.26	274747.74	292380.44	0

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20	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	34202.02	36397.02	106417.78	93969.26	274747.74	292380.44	60
1	34229.35	36429.97	106429.05	93959.31	274499.27	292146.97	59
2	34256.68	37462.92	106440.33	93949.35	274251.20	291913.89	58
3	34284.01	36495.88	106451.63	93939.38	274003.52	291681.21	57
4	34311.33	36528.85	106462.94	93929.40	273756.23	291448.92	56
5	34338.65	36561.82	106474.26	93919.42	273509.34	291217.03	55
6	34365.97	36594.80	106485.59	93909.43	273262.84	290985.53	54
7	34393.29	36627.79	106496.93	93899.43	273016.74	290754.43	53
8	34420.60	36660.79	106508.28	93889.42	272771.02	290523.72	52
9	34447.91	36693.79	106519.64	93879.40	272525.69	290293.39	51
10	34475.22	36726.80	106531.01	93869.37	272280.75	290063.46	50
11	34502.52	36759.82	106542.40	93859.34	272036.20	289833.91	49
12	34529.82	36792.84	106553.80	93849.30	271792.04	289604.75	48
13	34557.12	36725.87	106565.21	93839.25	271548.26	289375.98	47
14	34584.42	36858.91	106576.63	93829.19	271304.87	289147.60	46
15	34611.71	36891.95	106588.07	93819.13	271061.86	288919.59	45
16	34639.00	36925.00	106599.51	93809.06	270819.23	288691.98	44
17	34666.29	36958.06	106610.97	93798.98	270576.99	288464.74	43
18	34693.57	36991.13	106622.43	93788.89	270335.13	288237.89	42
19	34720.85	37024.20	106633.91	93778.79	270093.64	288011.42	41
20	34748.13	37057.28	106645.40	93768.69	269852.54	287785.32	40
21	34775.40	37090.37	106656.90	93758.58	269611.81	287559.61	39
22	34802.67	37123.46	106668.42	93748.46	269371.47	287334.28	38
23	34829.94	37156.56	106679.94	93738.33	269131.49	287109.32	37
24	34857.21	37189.67	106691.48	93728.19	268891.90	286884.74	36
25	34884.47	37222.78	106703.02	93718.05	268652.67	286660.53	35
26	34911.73	37255.90	106714.58	93707.90	268413.83	286436.70	34
27	34938.99	37289.03	106726.15	93697.74	268175.35	286213.24	33
28	34966.24	37322.17	106737.74	93687.57	267937.25	285990.15	32
29	34993.49	37355.32	106749.34	93677.40	267699.51	285767.44	31
30	35020.74	37388.47	106760.94	93667.22	267462.15	285545.09	30
31	35047.99	37421.63	106772.55	93657.03	267225.16	285323.12	29
32	35075.23	37454.79	106784.18	93646.83	266988.53	285101.52	28
33	35102.47	37487.97	106795.82	93636.62	266752.27	284880.28	27
34	35129.70	37521.15	106807.47	93626.40	266516.38	284659.41	26
35	35156.93	37554.34	106819.14	93616.18	266280.85	284438.91	25
36	35184.16	37587.53	106830.81	93605.95	266045.69	284218.77	24
37	35211.39	37620.73	106842.50	93595.71	265810.89	283998.99	23
38	35238.62	37653.94	106854.20	93585.46	265576.45	283779.58	22
39	35265.84	37687.16	106865.91	93575.21	265342.38	283560.54	21
40	35293.06	37720.38	106877.63	93564.95	265108.67	283341.85	20
41	35320.27	37753.61	106889.36	93554.68	264875.31	283123.53	19
42	35347.48	37786.85	106901.10	93544.40	264642.32	282905.56	18
43	35374.69	37820.10	106912.86	93534.11	264409.69	282687.96	17
44	35401.90	37853.35	106924.63	93523.82	264177.41	282470.71	16
45	35429.10	37886.61	106936.41	93513.52	263945.49	282253.82	15
46	35456.30	37919.88	106948.20	93503.21	263713.92	282037.29	14
47	35483.50	37953.16	106960.00	93492.89	263482.71	281821.11	13
48	35510.70	37986.44	106971.82	93482.56	263251.86	281605.29	12
49	35537.89	38019.73	106983.64	93472.23	263021.36	281389.82	11
50	35565.08	38053.03	106995.48	93461.89	262791.21	281174.71	10
51	35592.26	38086.33	107007.33	93451.54	262561.41	280959.95	9
52	35619.44	38119.64	107019.19	93441.18	262331.96	280745.54	8
53	35646.62	38152.96	107031.06	93430.82	262102.86	280531.48	7
54	35673.80	38186.29	107042.95	93420.45	261874.11	280317.77	6
55	35700.97	38219.62	107054.84	93410.07	261645.71	280104.41	5
56	35728.14	38252.96	107066.75	93399.68	261417.66	279891.40	4
57	35755.31	38286.31	107078.67	93389.28	261189.95	279678.73	3
58	35782.48	38319.67	107090.60	93378.87	260962.59	279466.41	2
59	35809.64	38353.03	107102.54	93368.46	260735.58	279254.44	1
60	35836.79	38386.40	107114.50	93358.04	260508.91	279042.81	0

21	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	35836.79	38386.40	107114.50	93358.04	260508.91	279042.81	60
1	35863.95	38419.78	107126.47	93347.61	260282.58	278831.53	59
2	35891.10	38453.17	107138.44	93337.17	260056.59	278620.59	58
3	35918.25	38486.56	107150.43	93326.73	259830.95	278409.99	57
4	35945.40	38519.96	107162.44	93316.28	259605.64	278199.73	56
5	35972.56	38553.37	107174.45	93305.82	259380.68	277989.82	55
6	35999.68	38586.79	107186.47	93295.35	259156.06	277780.24	54
7	36026.82	38620.21	107198.51	93284.87	258931.77	277571.00	53
8	36053.95	38653.64	107210.56	93274.39	258707.82	277362.11	52
9	36081.08	38687.08	107222.62	93263.90	258484.21	277153.55	51
10	36108.21	38720.53	107234.69	93253.40	258260.94	276945.32	50
11	36135.33	38753.98	107246.78	93242.89	258038.00	276737.43	49
12	36162.46	38787.44	107258.87	93232.38	257815.39	276529.88	48
13	36189.58	38820.91	107270.98	93221.86	257593.12	276322.66	47
14	36216.69	38854.39	107283.10	93211.33	257371.18	276115.78	46
15	36243.80	38887.87	107295.23	93200.79	257149.57	275909.23	45
16	36270.91	38921.36	107307.37	93190.24	256928.30	275703.01	44
17	36298.02	38954.86	107319.53	93179.68	256707.35	275497.12	43
18	36325.12	38988.37	107331.70	93169.12	256486.74	275291.57	42
19	36352.22	39021.89	107343.88	93158.55	256266.45	275086.34	41
20	36379.32	39055.41	107356.07	93147.97	256046.49	274881.44	40
21	36406.41	39088.94	107368.27	93137.38	255826.86	274676.87	39
22	36433.50	39122.48	107380.48	93126.79	255607.56	274472.63	38
23	36460.59	39156.02	107392.71	93116.19	255388.58	274268.71	37
24	36487.68	39189.57	107404.95	93105.58	255169.92	274065.12	36
25	36514.76	39223.13	107417.20	93094.96	254951.60	273861.86	35
26	36541.84	39256.70	107429.46	93084.33	254733.59	273658.92	34
27	36568.92	39290.28	107441.73	93073.70	254515.91	273456.30	33
28	36595.99	39323.86	107454.02	93063.06	254298.55	273254.00	32
29	36623.06	39357.45	107466.31	93052.41	254081.51	273052.03	31
30	36650.13	39391.05	107478.62	93041.75	253864.79	272850.38	30
31	36677.19	39224.66	107490.95	93031.09	253648.39	272649.05	29
32	36704.25	39458.27	107503.28	93020.42	253432.31	272448.04	28
33	36731.31	39491.89	107515.62	93009.74	253216.55	272247.35	27
34	36758.36	39525.52	107527.98	92999.05	253001.11	272046.98	26
35	36785.41	39559.16	107540.35	92988.35	252785.98	271846.93	25
36	36812.46	39592.80	107552.73	92977.65	252571.17	271647.19	24
37	36839.50	29626.45	107565.12	92966.94	252356.67	271447.77	23
38	36866.54	39660.11	107577.53	92956.22	252142.49	271248.66	22
39	36893.58	39693.78	107589.95	92945.49	251928.63	271049.87	21
40	36920.62	39727.46	107602.37	92934.75	251715.07	270851.39	20
41	36947.65	39761.14	107614.81	92924.01	251501.83	270653.23	19
42	36974.68	39794.83	107627.27	92913.26	251288.90	270455.38	18
43	37001.70	39828.53	107639.73	92902.50	251076.29	270257.84	17
44	37028.72	39862.24	107652.21	92891.73	250863.98	270060.61	16
45	37055.74	39895.96	107664.70	92880.95	250651.98	269863.70	15
46	37082.76	39929.68	107677.20	92870.17	250440.29	269667.09	14
47	37109.77	39963.41	107689.71	92859.38	250228.91	269470.79	13
48	37136.78	39997.15	107702.24	92848.58	250017.84	269274.80	12
49	37163.79	40030.89	107714.77	92837.77	249807.07	269079.12	11
50	37190.80	40064.65	107727.32	92826.96	249596.61	268883.74	10
51	37217.80	40098.41	107739.88	92816.14	249386.45	268688.67	9
52	37244.80	40132.18	107752.46	92805.31	249176.60	268493.91	8
53	37271.79	40165.96	107765.04	92794.47	248967.06	268299.45	7
54	37298.78	40199.75	107777.64	92783.62	248757.81	268105.30	6
55	37325.77	40233.54	107790.25	92772.77	248548.87	267911.45	5
56	37352.75	40267.34	107802.87	92761.91	248340.23	267717.90	4
57	37379.73	40301.15	107815.50	92751.04	248131.90	267524.65	3
58	37406.71	40334.97	107828.15	92740.16	247923.86	267331.70	2
59	37433.69	40368.79	107840.80	92729.28	247716.12	267139.06	1
60	37460.66	40402.62	107853.47	92718.39	247508.69	266946.72	0

22	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	37460.66	40402.62	107853.47	92718.39	247508.69	266946.72	60
1	37487.63	40436.46	107866.16	92707.49	247301.55	269754.67	59
2	37514.59	40470.31	107878.85	92696.58	247094.70	266562.92	58
3	37541.56	40504.17	107891.56	92685.66	246888.16	266371.48	57
4	37568.52	40538.04	107904.27	92674.73	246681.91	266180.33	56
5	37595.47	40571.91	107917.00	92663.80	246475.96	265989.47	55
6	37622.43	40605.79	107929.75	92652.86	246270.30	265798.91	54
7	37649.38	40639.68	107942.50	92641.91	246064.94	265608.65	53
8	37676.32	40673.58	107955.27	92630.96	245859.87	265418.68	52
9	37703.27	40707.48	107968.05	92620.00	245655.09	265229.01	51
10	37730.21	40741.39	107980.84	92609.03	245450.61	265039.62	50
11	37757.14	40775.31	107993.64	92598.05	245246.42	264850.54	49
12	37784.08	40809.24	108006.46	92587.06	245042.52	264661.74	48
13	37811.01	40843.18	108019.28	92576.06	244838.91	264473.23	47
14	37837.94	40877.13	108032.12	92565.06	244635.59	264285.02	46
15	37864.86	40911.08	108044.97	92554.05	244432.56	264097.09	45
16	37891.78	40945.04	108057.84	92543.03	244229.82	263909.46	44
17	37918.70	40979.01	108070.71	92532.00	244027.36	263722.11	43
18	37945.62	41012.99	108083.60	92520.97	243825.19	263535.05	42
19	37972.53	41046.97	108096.50	92509.93	243623.31	263348.28	41
20	37999.44	41080.97	108109.42	92498.88	243421.72	263161.80	40
21	38026.34	41114.97	108122.34	92487.82	243220.41	262975.60	39
22	38053.24	41148.98	108135.28	92476.75	243019.38	262789.69	38
23	38080.14	41183.00	108148.23	92465.68	242818.64	262604.06	37
24	38107.04	41217.03	108161.19	92454.60	242618.19	262418.72	36
25	38133.93	41251.06	108174.17	92443.51	242418.01	262233.66	35
26	38160.82	41285.10	108187.15	92432.41	242218.12	262048.88	34
27	38187.70	41319.15	108200.15	92421.31	242018.51	261864.39	33
28	38214.59	41353.21	108213.16	92410.20	241819.18	261680.18	32
29	38241.47	41387.28	108226.18	92399.08	241620.13	261496.24	31
30	38268.34	41421.36	108239.22	92387.95	241422.36	261312.59	30
31	38295.22	41455.44	108252.27	92376.81	241222.86	261129.22	29
32	38322.09	41489.53	108265.33	92365.67	241024.65	260946.13	28
33	38348.95	41523.63	108278.40	92354.52	240826.72	260763.32	27
34	38375.82	41557.74	108291.49	92343.36	240629.06	260580.78	26
35	38402.68	41591.86	108304.58	92332.19	240431.68	260398.52	25
36	38429.53	41625.99	108317.69	92321.02	240234.57	260216.54	24
37	38456.39	41660.12	108330.81	92309.84	240037.74	260034.84	23
38	38483.24	41694.26	108343.95	92298.65	239841.18	259853.41	22
39	38510.08	41728.41	108357.09	92287.45	239644.90	259672.25	21
40	38536.93	41762.57	108370.25	92276.24	239448.89	259491.37	20
41	38563.77	41796.74	108383.42	92265.03	239253.16	259310.77	19
42	38590.60	41830.91	108396.61	92253.81	239057.69	259130.43	18
43	38617.44	41865.09	108409.80	92242.58	238862.50	258950.37	17
44	38644.27	41899.28	108423.01	92231.34	238667.58	258770.58	16
45	38671.10	41933.48	108436.23	92220.09	238472.93	258591.07	15
46	38697.92	41967.69	108449.47	92208.84	238278.55	258411.82	14
47	38724.74	42001.91	108462.71	92197.58	238084.44	258232.84	13
48	38751.56	42036.13	108475.97	92186.31	237890.60	258054.14	12
49	38778.37	42070.36	108489.24	92175.03	237697.03	257875.70	11
50	38805.18	42104.60	108502.52	92163.75	237503.72	257697.53	10
51	38831.99	42138.85	108515.82	92152.46	237310.68	257519.63	9
52	38858.80	42173.11	108529.13	92141.16	227117.91	257341.99	8
53	38885.60	42207.38	108542.45	92129.85	236925.40	257164.62	7
54	38912.39	42241.66	108555.78	92118.54	236733.16	256987.52	6
55	38939.19	42275.94	108569.12	92107.22	236541.18	256810.69	5
56	38965.98	42310.23	108582.48	92095.89	236349.46	256634.12	4
57	38992.77	42344.53	108595.85	92084.55	226158.01	256457.81	3
58	39019.55	42378.84	108609.24	92073.20	235969.83	256281.76	2
59	39046.33	42413.16	108622.63	92061.85	235777.90	256105.99	1
60	39073.11	42447.49	108636.04	92050.49	235585.24	255930.47	0

23	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	39073.11	42447.49	108636.04	92050.49	235585.24	255930.47	60
1	39099.89	42481.82	108649.46	92039.12	235394.83	255755.21	59
2	39126.66	42516.16	108662.89	92027.74	235204.69	255580.22	58
3	39153.43	42550.51	108676.34	92016.35	235014.81	255405.48	57
4	39180.19	42584.87	108689.79	92004.96	234825.19	255231.01	56
5	39206.95	42619.24	108703.26	91993.56	234635.82	255056.80	55
6	39233.71	42653.62	108716.75	91982.15	234446.72	254882.84	54
7	39260.47	42688.00	108730.24	91970.73	234257.87	254709.15	53
8	39287.22	42722.39	108743.75	91959.31	234069.28	254535.71	52
9	39313.97	42756.79	108757.27	91947.88	233880.95	254362.53	51
10	39340.71	42791.20	108770.80	91936.44	233692.87	254189.61	50
11	39367.45	42825.62	108784.35	91924.99	233505.05	254016.94	49
12	39394.19	42860.05	108797.91	91913.53	233317.48	253844.53	48
13	39420.93	42894.49	108811.48	91902.07	233130.17	253672.38	47
14	39447.66	42928.94	108825.06	91890.60	232943.11	253500.48	46
15	39474.39	42963.39	108838.66	91879.12	232756.30	253328.83	45
16	39501.11	42997.85	108852.27	91867.63	232569.75	253157.44	44
17	39527.83	43032.32	108865.89	91856.14	232383.45	252986.50	43
18	39554.55	43066.80	108879.52	91844.64	232197.40	252815.41	42
19	39581.27	43101.29	108893.17	91833.13	232011.60	252644.78	41
20	39607.98	43135.79	108906.83	91821.61	231826.06	252474.40	40
21	39634.69	43170.30	108920.50	91810.08	231640.76	252304.26	39
22	39661.39	43204.81	108934.18	91798.55	231455.71	252134.38	38
23	39688.09	43239.33	108947.88	91787.01	231270.91	251964.75	37
24	39714.79	43273.86	108961.59	91775.46	231086.36	251795.37	36
25	39741.48	43308.40	108975.31	91763.90	230902.06	251626.24	35
26	39768.17	43342.95	108989.04	91752.34	230718.01	251457.35	34
27	39794.86	43377.51	109002.79	91740.77	230534.20	251288.71	33
28	39821.55	43412.08	109016.55	91729.19	230350.64	251120.32	32
29	39848.23	43446.66	109030.32	91717.60	230167.32	250952.18	31
30	39874.91	43481.24	109044.11	91706.01	229984.25	250784.28	30
31	39901.58	43515.83	109057.91	91694.41	229801.43	250616.63	29
32	39928.25	43550.43	109071.72	91682.80	229618.85	250449.23	28
33	39954.92	43585.04	109085.54	91671.18	229436.51	250282.07	27
34	39981.58	43619.66	109099.38	91659.55	229254.42	250115.15	26
35	40008.24	43654.29	109113.23	91647.91	229072.57	249948.47	25
36	40034.00	43688.93	109127.09	91636.27	228890.96	249782.04	24
37	40061.56	43723.58	109140.97	91624.62	228709.59	249615.86	23
38	40088.21	43758.23	109154.86	91612.96	228528.46	249449.91	22
39	40114.86	43792.89	109168.76	91601.30	228347.58	249284.21	21
40	40141.50	43827.56	109182.67	91589.63	228166.93	249118.74	20
41	40168.14	43862.24	109196.59	91577.95	227986.53	248953.52	19
42	40194.78	43896.93	109210.53	91566.26	227806.36	248788.54	18
43	40221.41	43931.63	109224.48	91554.56	227626.43	248623.80	17
44	40248.04	43966.34	109238.45	91542.86	227446.74	248459.29	16
45	40274.67	44001.06	109252.43	91531.15	227267.29	248295.03	15
46	40301.29	44035.78	109266.42	91519.43	227088.07	248131.00	14
47	40327.91	44070.51	109280.42	91507.70	226909.09	247967.21	13
48	40354.53	44105.25	109294.44	91495.96	226730.35	247803.66	12
49	40381.14	44140.00	109308.47	91484.22	226551.84	247640.34	11
50	40407.75	44174.76	109322.51	91472.47	226373.57	247477.26	10
51	40434.36	44209.53	109336.56	91460.71	226195.53	247314.42	9
52	40460.96	44244.31	109350.63	91448.95	226017.73	247151.81	8
53	40487.56	44279.10	109364.71	91437.18	225840.16	246989.43	7
54	40514.16	44313.90	109378.80	91425.40	225662.83	246827.29	6
55	40540.75	44348.71	109392.91	91413.61	225485.72	246665.38	5
56	40567.34	44383.53	109407.03	91401.81	225308.85	246503.71	4
57	40593.93	44418.35	109421.16	91390.00	225132.21	246342.27	3
58	40620.51	44453.18	109435.30	91378.19	224955.80	246181.06	2
59	40647.09	44488.02	109449.46	91366.37	224779.62	246020.08	1
60	40673.66	44522.87	109463.63	91354.54	224603.68	245859.33	0

24	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	40673.66	44522.87	109463.63	91354.54	224603.68	245859.33	60
1	40700.23	44557.73	109477.81	91342.71	224427.96	245698.82	59
2	40726.50	44592.60	109492.01	91330.87	224252.47	245538.53	58
3	40753.37	44627.48	109506.22	91319.02	224077.21	245378.48	57
4	40779.93	44662.37	109520.44	91307.16	223902.18	245218.65	56
5	40806.49	44697.27	109534.67	91295.29	223727.38	245059.05	55
6	40833.05	44732.17	109548.92	91283.42	223552.80	244899.68	54
7	40859.60	44767.08	109563.18	91271.54	223378.45	244740.54	53
8	40886.15	44802.00	109577.46	91259.65	223204.33	244581.63	52
9	40912.69	44836.93	109591.74	91247.75	223030.43	244422.94	51
10	40939.23	44871.87	109606.04	91235.84	222856.76	244264.48	50
11	40965.77	44906.82	109620.36	91223.93	222683.31	244106.24	49
12	40992.30	44941.78	109634.68	91212.01	222510.09	243948.23	48
13	41018.83	44976.75	109649.02	91200.08	222337.09	243790.45	47
14	41045.36	45011.73	109663.37	91188.14	222164.32	243632.89	46
15	41071.89	45046.72	109677.74	91176.20	221991.77	243475.55	45
16	41098.41	45081.72	109692.12	91164.25	221819.44	243318.44	44
17	41124.93	45116.73	109706.51	91152.29	221647.33	243161.55	43
18	41151.44	45151.74	109720.91	91140.32	221475.45	243004.89	42
19	41177.95	45186.76	109735.33	91128.35	221303.79	242848.44	41
20	41204.46	45221.79	109749.76	91116.37	221132.34	242692.22	40
21	41230.96	45256.83	109764.20	91104.38	220961.12	242536.22	39
22	41257.46	45291.88	109778.66	91092.38	220790.12	242380.44	38
23	41283.95	45326.94	109793.13	91080.38	220619.34	242224.88	37
24	41310.44	45362.01	109807.61	91068.37	220448.78	242069.54	36
25	41336.93	45397.09	109822.11	91056.35	220278.43	241914.42	35
26	41363.42	45432.18	109836.62	91044.32	220108.31	241759.52	34
27	41389.90	45467.28	109851.14	91032.28	219938.40	241604.84	33
28	41416.38	45502.39	109865.68	91020.24	219768.71	241450.38	32
29	41442.85	45537.51	109880.23	91008.19	219599.23	241296.13	31
30	41469.32	45572.64	109894.79	90996.13	219429.97	241142.10	30
31	41495.79	45607.77	109909.36	90984.06	219260.93	240988.29	29
32	41522.26	45642.91	109923.95	90971.98	219092.10	240834.69	28
33	41548.72	45678.06	109938.55	90959.90	218923.49	240681.32	27
34	41575.18	45713.22	109953.17	90947.81	218755.10	240528.15	26
35	41601.63	45748.39	109967.79	90935.71	218586.91	240375.20	25
36	41628.08	45783.57	109982.43	90923.61	218418.94	240222.47	24
37	41654.53	45818.76	109997.09	90911.50	218251.19	240069.95	23
38	41680.97	45853.96	110011.76	90899.38	218083.64	239917.64	22
39	41707.41	45889.17	110026.44	90887.25	217916.31	239765.55	21
40	41733.85	45924.39	110041.13	90875.11	217749.20	239613.67	20
41	41760.28	45959.62	110055.84	90862.97	217582.29	239462.01	19
42	41786.71	45994.86	110070.56	90850.82	217415.59	239310.55	18
43	41813.13	46030.11	110085.29	90838.66	217249.11	239159.31	17
44	41839.55	46065.37	110100.04	90826.49	217082.83	239008.28	16
45	41865.97	46100.64	110114.80	90814.32	216916.77	238857.46	15
46	41892.39	46135.91	110129.57	90802.14	216750.91	238706.85	14
47	41918.80	46171.19	110144.36	90789.95	216585.27	238556.45	13
48	41945.21	46206.48	110159.16	90777.75	216419.83	238406.25	12
49	41971.61	16241.78	110173.97	90765.54	216254.60	238256.27	11
50	41998.01	46277.09	110188.79	90753.33	216089.58	238106.50	10
51	42024.41	46312.42	110203.63	90741.11	215924.76	237956.93	9
52	42050.80	46347.76	110218.49	90728.88	215760.15	237807.58	8
53	42077.19	46383.11	110233.35	90716.64	215595.75	237658.43	7
54	42103.58	46418.46	110248.23	90704.40	215431.56	237509.49	6
55	42129.96	46453.82	110263.13	90692.15	215267.57	237360.75	5
56	42156.34	46489.19	110278.03	90679.89	215103.78	237212.22	4
57	42182.72	46524.57	110292.95	90667.62	214940.20	237063.90	3
58	42209.09	46559.96	110307.89	90655.35	214776.83	236915.78	2
59	42235.46	46595.36	110322.83	90643.07	214613.66	236767.87	1
60	42261.83	16630.77	110337.79	90630.78	214450.69	236620.16	0

25	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	42261.83	46630.77	110337.79	90630.78	214430.69	236620.16	60
1	42288.19	46666.19	110352.77	90618.48	214287.93	236472.65	59
2	42314.55	46701.62	110367.75	90606.17	214125.37	236325.35	58
3	42340.90	46737.06	110382.75	90593.86	213963.01	236178.26	57
4	42367.25	46772.51	110397.77	90581.54	213800.85	236031.36	56
5	42393.60	46807.97	110412.79	90569.21	213638.89	235884.67	55
6	42419.94	46843.43	110427.83	90556.88	213477.14	235738.18	54
7	42446.28	46878.90	110442.89	90544.54	213315.59	235591.89	53
8	42472.62	46914.38	110457.95	90532.19	213154.23	235445.81	52
9	42498.95	46949.88	110473.03	90519.83	212993.08	235299.92	51
10	42525.28	46985.39	110488.13	90507.46	212832.13	235154.24	50
11	42551.61	47020.90	110503.24	90495.09	212671.37	235008.75	49
12	42577.93	47056.43	110518.36	90482.71	212510.82	234863.47	48
13	42604.25	47091.96	110533.49	90470.32	212350.46	234718.38	47
14	42630.56	47127.51	110548.64	90457.92	212190.30	234573.49	46
15	42656.87	47163.06	110563.80	90445.51	212030.34	234428.80	45
16	42683.18	47198.63	110578.98	90433.10	211870.57	234284.31	44
17	42709.49	47234.20	110594.17	90420.68	211711.01	234140.02	43
18	42735.79	47269.78	110609.37	90408.25	211551.64	233995.93	42
19	42762.09	47305.38	110624.58	90395.82	211392.46	233852.03	41
20	42788.38	47340.98	110639.81	90383.38	211233.48	233708.33	40
21	42814.67	47376.59	110655.06	90370.93	211074.70	233564.82	39
22	42840.95	47412.22	110670.31	90358.47	210916.11	233421.52	38
23	42867.23	47447.85	110685.58	90346.00	210757.71	233278.40	37
24	42893.51	47483.49	110700.87	90333.53	210599.51	233135.48	36
25	42919.79	47519.14	110716.16	90321.05	210441.50	232992.76	35
26	42946.06	47554.81	110731.47	90308.56	210283.69	232850.23	34
27	42972.33	47590.48	110746.80	90296.06	210126.07	232707.90	33
28	42998.59	47626.16	110762.14	90283.56	209968.64	232565.75	32
29	43024.85	47661.85	110777.49	90271.05	209811.40	232423.81	31
30	43051.11	47697.55	110792.85	90258.53	209654.36	232282.05	30
31	43077.36	47733.26	110808.23	90246.00	209497.51	232140.49	29
32	43103.61	47768.99	110823.63	90233.47	209340.84	231999.11	28
33	43129.86	47804.72	110839.03	90220.93	209184.37	231857.94	27
34	43156.10	47840.46	110854.45	90208.38	209028.09	231716.95	26
35	43182.34	47876.21	110869.89	90195.82	208872.00	231576.15	25
36	43208.57	47911.97	110885.33	90183.25	208716.10	231435.54	24
37	43234.80	47947.74	110900.79	90170.68	208560.39	231295.13	23
38	43261.03	47983.52	110916.27	90158.10	208404.86	231154.90	22
39	43287.26	48019.32	110931.76	90145.51	208249.53	231014.86	21
40	43313.48	48055.12	110947.26	90132.91	208094.38	230875.01	20
41	43339.70	48090.93	110962.77	90120.31	207939.42	230735.35	19
42	43365.91	48126.75	110978.30	90107.70	207784.65	230595.88	18
43	43392.12	48162.58	110993.85	90095.08	207630.07	230456.60	17
44	43418.33	48198.42	111009.41	90082.45	207475.67	230317.51	16
45	43444.53	48234.27	111024.98	90069.82	207321.46	230178.60	15
46	43470.73	48270.14	111040.56	90057.18	207167.43	230039.88	14
47	43496.92	48306.01	111056.16	90044.53	207012.59	229901.34	13
48	43523.11	48341.89	111071.77	90031.87	206859.93	229762.99	12
49	43549.30	48377.78	111087.40	90019.21	206706.46	229624.83	11
50	43575.48	48413.68	111103.04	90006.54	206553.18	229486.85	10
51	43601.66	48449.59	111118.69	89993.86	206400.08	229349.06	9
52	43627.84	48485.52	111134.36	89981.17	206247.16	229211.45	8
53	43654.01	48521.45	111150.04	89968.48	206094.42	229074.03	7
54	43680.18	48557.39	111165.73	89955.78	205941.87	228936.79	6
55	43706.34	48593.34	111181.44	89943.07	205789.50	228799.74	5
56	43732.50	48629.31	111197.16	89930.35	205637.32	228662.86	4
57	43758.66	48665.28	111212.90	89917.62	205485.31	228527.18	3
58	43784.82	48701.26	111228.65	89904.89	205333.49	228389.67	2
59	43810.97	48737.26	111244.42	89892.15	205181.84	228253.34	1
60	43837.12	48773.26	111260.19	89879.40	205030.38	228117.20	0

26	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	43837.12	48773.26	111260.19	89879.40	205030.38	228117.20	60
1	43863.26	48809.27	111275.98	89866.65	204879.10	227981.24	59
2	43889.40	48845.30	111291.79	89853.89	204728.00	227845.46	58
3	43915.53	48881.33	111307.61	89841.12	204577.08	227709.86	57
4	43941.66	48917.37	111323.45	89828.34	204426.34	227574.45	56
5	43967.79	48953.43	111339.30	89815.55	204275.78	227439.21	55
6	43993.92	48989.49	111355.16	89802.76	204125.40	227304.15	54
7	44020.04	49025.57	111371.03	89789.96	203975.19	227169.27	53
8	44046.16	49061.66	111386.92	89777.15	203825.17	227034.57	52
9	44072.27	49097.75	111402.82	89764.33	203675.32	226900.05	51
10	44098.38	49133.86	111418.74	89751.51	203525.65	226765.71	50
11	44124.48	49169.97	111434.67	89738.68	203376.15	226631.55	49
12	44150.58	49206.10	111450.62	89725.84	203226.83	226497.56	48
13	44176.68	49242.24	111466.58	89712.99	203077.69	226363.75	47
14	44202.78	49278.38	111482.55	89700.13	202928.73	226230.12	46
15	44228.87	49314.54	111498.54	89687.27	202779.94	226096.67	45
16	44254.96	49350.71	111514.54	89674.40	202631.33	225963.39	44
17	44281.04	49386.89	111530.56	89661.52	202482.89	225830.29	43
18	44307.12	49423.08	111546.59	89648.64	202334.62	225697.36	42
19	44333.20	49459.28	111562.63	89635.75	202186.53	225564.61	41
20	44359.27	49495.49	111578.69	89622.85	202038.62	225432.04	40
21	44385.34	49531.71	111594.76	89609.94	201890.88	225299.64	39
22	44411.40	49567.94	111610.84	89597.03	201743.31	225167.41	38
23	44437.46	49604.18	111626.94	89584.11	201595.92	225035.36	37
24	44463.52	49640.43	111643.06	89571.18	201448.69	224903.48	36
25	44489.57	49676.69	111659.19	89558.24	201301.64	224771.78	35
26	44515.62	49712.97	111675.33	89545.29	201154.77	224640.24	34
27	44541.67	49749.25	111691.49	89532.34	201008.06	224508.89	33
28	44567.71	49785.54	111707.66	89519.38	200861.53	224377.70	32
29	44593.75	49821.85	111723.84	89506.41	200715.16	224246.69	31
30	44619.78	49858.16	111740.04	89493.43	200568.97	224115.84	30
31	44645.81	49894.49	111756.25	89480.45	200422.95	223985.17	29
32	44671.84	49930.82	111772.48	89467.46	200277.10	223854.67	28
33	44697.86	49967.17	111788.72	88454.46	200131.42	223724.35	27
34	44723.88	50003.52	111804.98	89441.45	199985.90	223594.19	26
35	44749.90	50039.89	111821.25	89428.44	199840.56	223464.20	25
36	44775.91	50076.27	111837.53	89415.42	199695.39	223334.38	24
37	44801.92	50112.66	111853.83	89402.39	199550.38	223204.74	23
38	44827.92	50149.06	111870.14	89389.36	199405.54	223075.26	22
39	44853.92	50185.47	111886.47	89376.32	199260.87	222945.95	21
40	44879.92	50221.89	111902.81	89363.27	199116.37	222816.81	20
41	44905.91	50258.32	111919.16	89350.21	198972.04	222687.83	19
42	44931.90	50294.76	111935.53	89337.14	198827.87	222559.03	18
43	44957.89	50331.21	111951.91	89324.06	198683.87	222430.39	17
44	44983.87	50367.67	111968.31	89310.98	198540.03	222301.92	16
45	45009.85	50404.15	111984.72	89297.89	198396.36	222173.62	15
46	45035.82	50440.63	112001.15	89284.79	198252.86	222045.48	14
47	45061.79	50477.13	112017.59	89271.69	198109.52	221917.51	13
48	45087.76	50513.63	112034.05	89258.58	197966.35	221789.71	12
49	45113.72	50550.15	112050.52	89245.46	197823.34	221662.07	11
50	45139.68	50586.68	112067.00	89232.35	197680.50	221534.60	10
51	45165.63	50623.22	112083.50	89219.20	197537.82	221407.30	9
52	45191.58	50659.77	112100.01	89206.06	197395.31	221280.16	8
53	45217.53	50696.33	112116.53	89192.91	197252.96	221153.18	7
54	45243.47	50732.90	112133.07	89179.75	197110.77	221026.37	6
55	45269.41	50769.48	112149.63	89166.59	196968.74	220899.72	5
56	45295.35	50806.07	112166.20	89153.42	196826.88	220773.23	4
57	45321.28	50842.67	112182.78	89140.24	196685.18	220646.91	3
58	45347.21	50879.28	112199.38	89127.05	196543.64	220520.75	2
59	45373.13	50915.91	112216.00	89113.85	196402.27	220394.76	1
60	45399.05	50952.54	112232.62	89100.65	196261.05	220268.93	0

27	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	45399.05	50952.54	112232.62	89100.65	196261.05	220268.93	60
1	45424.97	50989.19	112249.26	89087.44	196120.00	220143.26	59
2	45450.88	51025.85	112265.92	89074.22	195979.10	220017.75	58
3	45476.79	51062.52	112282.59	89061.00	195838.37	219892.40	57
4	45502.69	51099.19	112299.28	89047.77	195697.80	219767.21	56
5	45528.59	51135.88	112315.98	89034.53	195557.39	219642.19	55
6	45554.49	51172.59	112332.69	89021.28	195417.13	219517.33	54
7	45580.38	51209.30	112349.42	89008.02	195277.04	219392.62	53
8	45606.27	51246.02	112366.16	88994.76	195137.11	219268.08	52
9	45632.16	51282.75	112382.92	88981.49	194997.33	219143.70	51
10	45658.04	51319.50	112399.69	88968.21	194857.71	219019.47	50
11	45683.92	51356.25	112416.48	88954.93	194718.26	218895.41	49
12	45709.79	51393.02	112433.28	88941.64	194578.96	218771.50	48
13	45735.66	51429.80	112450.10	88928.34	194439.81	218647.75	47
14	45761.53	51466.58	112466.93	88915.03	194300.83	218524.17	46
15	45787.39	51503.38	112483.77	88901.71	194162.00	218400.74	45
16	45813.25	51540.19	112500.63	88888.39	194023.33	218277.46	44
17	45839.10	51577.02	112517.50	88875.06	193884.81	218154.35	43
18	45864.95	51613.85	112534.39	88861.72	193746.45	218031.39	42
19	45890.80	51650.69	112551.29	88848.37	193608.25	217908.59	41
20	45916.64	51687.55	112568.21	88835.02	193470.20	217785.94	40
21	45942.48	51724.41	112585.14	88821.66	193332.31	217663.46	39
22	45968.32	51761.29	112602.09	88808.29	193194.57	217541.12	38
23	45994.15	51798.18	112619.05	88794.92	193056.98	217418.95	37
24	46019.98	51835.08	112636.03	88781.54	192919.56	217296.93	36
25	46045.80	51871.99	112653.02	88768.15	192782.28	217175.06	35
26	46071.62	51908.91	112670.03	88754.75	192645.16	217053.35	34
27	46097.44	51945.84	112687.05	88741.34	192508.19	216931.80	33
28	46123.25	51982.78	112704.08	88727.93	192371.38	216810.40	32
29	46149.06	52019.74	112721.13	88714.51	192234.72	216689.15	31
30	46174.86	52056.70	112738.19	88701.08	192098.21	216568.06	30
31	46200.66	52093.68	112755.27	88687.64	191961.86	216447.12	29
32	46226.46	52130.67	112772.37	88674.20	191825.65	216326.33	28
33	46252.25	52167.67	112789.48	88660.75	191689.60	216205.70	27
34	46278.04	52204.68	112806.60	88647.29	191553.70	216085.22	26
35	46303.82	52241.70	112823.74	88633.83	191417.95	215964.89	25
36	46329.60	52278.74	112840.89	88620.36	191282.36	215844.71	24
37	46355.38	52315.78	112858.06	88606.88	191146.91	215724.69	23
38	46381.15	52352.84	112875.24	88593.39	191011.62	215604.82	22
39	46406.92	52389.90	112892.44	88579.89	190876.47	215485.10	21
40	46432.69	52426.98	112909.65	88566.39	190741.47	215365.53	20
41	46458.45	52464.07	112926.88	88552.88	190606.63	215246.11	19
42	46484.21	52501.17	112944.12	88539.36	190471.93	215126.84	18
43	46509.96	52538.29	112961.37	88525.83	190337.38	215007.72	17
44	46535.71	52575.41	112978.64	88512.30	190202.99	214888.75	16
45	46561.45	52612.54	112995.93	88498.76	190068.74	214769.93	15
46	46587.19	52649.69	113013.23	88485.21	189934.64	214651.27	14
47	46612.93	52686.85	113030.55	88471.66	189800.68	214532.75	13
48	46638.66	52724.02	113047.88	88458.10	189666.88	214414.37	12
49	46664.39	52761.20	103065.22	88444.53	189533.22	214296.15	11
50	46690.12	52798.39	113082.58	88430.95	189399.71	214178.08	10
51	46715.84	52835.59	113099.96	88417.36	189266.34	214060.15	9
52	46741.56	52872.81	113117.35	88403.77	189133.13	213942.38	8
53	46767.27	52910.04	113134.75	88390.17	189000.06	213824.75	7
54	46792.98	52947.27	113152.17	88376.56	188867.13	213707.26	6
55	46818.69	52984.52	113169.61	88362.94	188734.36	213589.93	5
56	46844.39	53021.78	113187.06	88349.32	188601.72	213472.74	4
57	46870.09	53059.06	113204.52	88335.69	188469.24	213355.70	3
58	46895.78	53096.34	113222.00	88322.05	188336.90	213238.80	2
59	46921.47	53133.64	113239.50	88308.41	188204.70	213122.05	1
60	46947.16	53170.94	113257.01	88294.76	188072.65	213005.45	0

28	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	46947.16	53170.94	113257.01	88294.76	188072.65	213005.45	60
1	46972.84	53208.26	113274.53	88281.10	187940.74	212888.99	59
2	46998.52	53245.59	113292.07	88267.43	187808.98	212772.67	58
3	47024.19	53282.93	113309.62	88253.75	187677.36	212656.51	57
4	47049.86	53320.29	113327.19	88240.07	187545.88	212540.48	56
5	47075.53	53357.65	113344.78	88226.38	187414.55	212424.60	55
6	47101.19	53395.03	113362.38	88212.68	187283.36	212308.87	54
7	47126.85	53432.42	113379.99	88198.98	187152.31	212193.28	53
8	47152.50	53469.82	113397.62	88185.27	187021.41	212077.83	52
9	47178.15	53507.23	113415.27	88171.55	186890.64	211962.53	51
10	47203.80	53544.65	113432.93	88157.82	186760.03	211847.37	50
11	47229.44	53582.08	113450.60	88144.09	186629.55	211732.35	49
12	47255.08	53619.53	113468.29	88130.35	186499.21	211617.48	48
13	47280.71	53656.99	113486.00	88116.60	186369.02	211502.74	47
14	47306.34	53694.46	113503.72	88102.84	186238.96	211388.15	46
15	47331.97	53731.94	113521.46	88089.07	186109.05	211273.71	45
16	47357.59	53769.43	113539.21	88075.30	185979.28	211159.40	44
17	47383.21	53806.94	113556.98	88061.52	185849.65	211045.23	43
18	47408.82	53844.45	113574.76	88047.73	185720.15	210931.21	42
19	47434.43	53881.98	113592.55	88033.94	185590.80	210817.33	41
20	47460.04	53919.52	113610.36	88020.14	185461.59	210703.59	40
21	47485.64	53957.07	113628.19	88006.33	185332.52	210589.98	39
22	47511.24	53994.64	113646.03	87992.51	185203.58	210476.52	38
23	47536.83	54032.21	113663.89	87978.69	185074.79	210363.20	37
24	47562.42	54069.80	113681.76	87964.86	184946.13	210250.02	36
25	47588.01	54107.40	113699.65	87951.02	184817.61	210136.98	35
26	47613.59	54145.01	113717.55	87937.17	184689.23	210024.08	34
27	47639.17	54182.63	113735.47	87923.32	184560.99	209911.31	33
28	47664.74	54220.27	113753.40	87909.46	184432.89	209798.69	32
29	47690.31	54257.91	113771.35	87895.59	184304.92	209686.20	31
30	47715.88	54295.57	113789.32	87881.71	184177.09	209573.85	30
31	47741.44	54333.24	113807.30	87867.83	184049.39	209461.64	29
32	47767.00	54370.92	113825.29	87853.94	183921.84	209349.57	28
33	47792.55	54408.62	113843.30	87840.04	183794.42	209237.64	27
34	47818.10	54446.32	113861.33	87826.13	183667.13	209125.84	26
35	47843.64	54484.04	113879.37	87812.22	183539.99	209014.18	25
36	47869.18	54521.77	113897.43	87798.30	183412.97	208902.65	24
37	47894.72	54559.51	113915.50	87784.37	183286.10	208791.27	23
38	47920.26	54597.26	113933.59	87770.43	183159.36	208680.02	22
39	47945.79	54635.03	113951.69	87756.49	183032.75	208568.90	21
40	47971.31	54672.81	113969.81	87742.54	182906.28	208457.92	20
41	47996.83	54710.60	113987.94	87728.58	182779.94	208347.07	19
42	48022.35	54748.40	114006.09	87714.61	182653.74	208236.37	18
43	48047.86	54786.21	114024.25	87700.64	182527.67	208125.80	17
44	48073.37	54824.04	114042.43	87686.66	182401.73	208015.36	16
45	48098.88	54861.88	114060.62	87672.67	182275.93	207905.06	15
46	48124.38	54899.73	114078.83	87658.68	182150.26	207794.89	14
47	48149.88	54937.59	114097.06	87644.68	182024.73	207684.86	13
48	48175.37	54975.46	114115.30	87630.67	181899.32	207574.96	12
49	48200.86	55013.35	114133.56	87616.65	181774.05	207465.19	11
50	48226.34	55051.25	114151.83	87602.62	181648.92	207355.56	10
51	48251.82	55089.16	114170.12	87588.59	181523.91	207246.06	9
52	48277.30	55127.08	114188.42	87574.55	181399.04	207136.70	8
53	48302.77	55165.02	114206.74	87560.50	181274.30	207027.46	7
54	48328.24	55202.97	114225.07	87546.45	181149.69	206918.36	6
55	48353.70	55240.93	114243.42	87532.39	181025.21	206809.40	5
56	48379.16	55278.90	114261.79	87518.32	180900.86	206700.56	4
57	48404.62	55316.80	114280.17	87504.24	180776.64	206591.86	3
58	48430.07	55354.88	114298.57	87490.16	180652.56	206483.28	2
59	48455.52	55392.88	114316.98	87476.07	180528.60	206374.84	1
60	48480.96	55430.90	114335.41	87461.97	180404.78	206266.53	0

29	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	48480.96	55430.90	114335.41	87461.97	180404.78	206266.53	60
1	48506.40	55468.94	114353.85	87447.86	180281.08	206158.36	59
2	48531.84	55506.98	114372.31	87433.75	180157.51	206050.31	58
3	48557.27	55545.04	114390.78	87419.63	180034.08	205942.39	57
4	48582.70	55583.11	114409.27	87405.50	179910.77	205834.60	56
5	48608.12	55621.19	114427.78	87391.36	179787.59	205726.95	55
6	48633.54	55659.29	114446.30	87377.22	179664.54	205619.42	54
7	48658.95	55697.39	114464.84	87363.07	179541.62	205512.03	53
8	48684.36	55735.51	114483.39	87348.91	179418.83	205404.76	52
9	48709.77	55773.64	114501.96	87334.75	179296.16	205297.62	51
10	48735.17	55811.79	114520.55	87320.58	179173.62	205190.61	50
11	48760.57	55849.94	114539.15	87306.40	179051.21	205083.73	49
12	48785.97	55888.11	114557.76	87292.21	178928.93	204976.98	48
13	48811.36	55926.29	114576.39	87278.01	178806.78	204870.36	47
14	48836.74	55964.48	114595.04	87263.81	178684.75	204763.86	46
15	48862.12	56002.69	114613.70	87249.60	178562.85	204657.50	45
16	48887.50	56040.91	114632.38	87235.38	178441.07	204551.26	44
17	48912.87	56079.14	114651.08	87221.16	178319.43	204445.15	43
18	48938.24	56117.38	114669.79	87206.93	178197.90	204339.16	42
19	48963.61	56155.64	114688.52	87192.69	178076.51	204233.30	41
20	48988.97	56193.91	114707.26	87178.44	177955.24	204127.57	40
21	49014.33	56232.19	114726.02	87164.19	177834.09	204021.97	39
22	49039.68	56270.48	114744.79	87149.93	177713.07	203916.49	38
23	49065.03	56308.79	114763.58	87135.66	177592.18	203811.14	37
24	49090.37	56347.10	114782.39	87121.38	177471.41	203705.92	36
25	49115.71	56385.43	114801.21	87107.10	177350.76	203600.82	35
26	49141.05	56423.78	114820.05	87092.81	177230.24	203495.85	34
27	49166.38	56462.13	114838.90	87078.51	177109.85	203391.00	33
28	49191.71	56500.50	114857.77	87064.20	176989.58	203286.27	32
29	49217.04	56538.88	114876.65	87049.89	176869.43	203181.68	31
30	49242.36	56577.28	114895.55	87035.57	176749.40	203077.20	30
31	49267.67	56615.68	114914.47	87021.24	176629.50	202972.86	29
32	49292.98	56654.10	114933.40	87006.90	176509.72	202868.63	28
33	49318.29	56692.53	114952.35	86992.56	176390.07	202764.53	27
34	49343.59	56730.98	114971.32	86978.21	176270.53	202660.56	26
35	49368.89	56769.44	114990.30	86963.85	176151.12	202556.70	25
36	49394.19	56807.91	115009.30	86949.49	176031.83	202452.97	24
37	49419.48	56846.39	115028.31	86935.12	175912.67	202349.37	23
38	49444.77	56884.88	115047.34	86920.74	175793.62	202245.89	22
39	49470.05	56923.39	115066.38	86906.35	175674.70	202142.53	21
40	49495.33	56961.91	115085.44	86891.96	175555.90	202039.29	20
41	49520.60	57000.45	115104.52	86877.56	175437.22	201936.17	19
42	49545.87	57038.99	115123.61	86863.15	175318.66	201833.18	18
43	49571.13	57077.55	115142.72	86848.73	175200.23	201730.31	17
44	49596.39	57116.12	115161.85	86834.31	175081.91	201627.56	16
45	49621.65	57154.71	115180.99	86819.88	174963.71	201524.94	15
46	49646.90	57193.31	115200.15	86805.44	174845.64	201422.43	14
47	49672.15	57231.92	115219.32	86791.00	174727.68	201320.05	13
48	49697.40	57270.54	115238.51	86776.55	174609.84	201217.79	12
49	49722.64	57309.18	115257.72	86762.09	174492.13	201115.64	11
50	49747.87	57347.83	115276.94	86747.62	174374.53	201013.62	10
51	49773.10	57386.49	115296.18	86733.14	174257.05	200911.72	9
52	49798.33	57425.16	115315.43	86718.66	174139.69	200809.94	8
53	49823.55	57463.85	115334.70	86704.17	174022.45	200708.28	7
54	49848.77	57502.55	115353.99	86689.67	173905.33	200606.74	6
55	49873.99	57541.26	115373.29	86675.17	173788.33	200505.32	5
56	49899.20	57579.99	115392.61	86660.66	173671.44	200404.02	4
57	49924.41	57618.73	115411.95	86646.14	173554.68	200302.83	3
58	49949.61	57657.48	115431.30	86631.61	173438.03	200201.77	2
59	49974.81	57696.25	115450.67	86617.08	173321.49	200100.83	1
60	50000.00	57735.03	115470.05	86602.54	173205.08	200000.00	0

30	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	50000.00	57735.03	115470.05	86602.54	173205.08	200000.00	60
1	50025.19	57773.82	115489.45	86587.99	173088.78	199899.29	59
2	50050.38	57812.62	115508.87	86573.43	172972.60	199798.70	58
3	50075.56	57851.44	115528.30	86558.87	172856.54	199698.23	57
4	50100.74	57890.27	115547.75	86544.30	172740.60	199597.88	56
5	50125.91	57929.11	115567.22	86529.72	172624.77	199497.64	55
6	50151.08	57967.97	115586.70	86515.14	172509.05	199397.53	54
7	50176.24	58006.84	115606.20	86500.55	172393.45	199297.52	53
8	50201.40	58045.73	115625.72	86485.95	172277.97	199197.64	52
9	50226.55	58084.62	115645.25	86471.34	172162.61	199097.87	51
10	50251.70	58123.53	115664.80	86456.73	172047.36	198998.22	50
11	50276.85	58162.45	115684.36	86442.11	171932.22	198898.69	49
12	50301.99	58201.39	115703.94	86427.48	171817.20	198799.27	48
13	50327.13	58240.34	115723.54	86412.84	171702.30	198699.97	47
14	50352.27	58279.30	115743.15	86398.20	171587.51	198600.80	46
15	50377.40	58318.28	115762.78	86383.55	171472.83	198501.72	45
16	50402.53	58357.27	115782.43	86368.89	171358.27	198402.76	44
17	50427.65	58396.27	115802.09	86354.23	171243.82	198303.93	43
18	50452.77	58435.28	115821.77	86339.56	171129.49	198205.20	42
19	50477.88	58474.31	115841.47	86324.88	171015.27	198106.59	41
20	50502.99	58513.35	115861.18	86310.19	170901.16	198008.10	40
21	50528.09	58552.41	115880.91	86295.49	170787.17	197909.72	39
22	50553.19	58591.48	115900.65	86280.79	170673.29	197811.46	38
23	50578.28	58630.56	115920.41	86266.08	170559.53	197713.31	37
24	50603.37	58669.65	115940.19	86251.36	170445.87	197615.27	36
25	50628.46	58708.76	115959.99	86236.64	170332.33	197517.35	35
26	50653.55	58747.88	115979.80	86221.91	170218.90	197419.54	34
27	50678.63	58787.02	115999.63	86207.17	170105.59	197321.85	33
28	50703.70	58826.17	116019.47	86192.43	169992.38	197224.26	32
29	50728.77	58865.33	116039.33	86177.68	169879.29	197126.80	31
30	50753.84	58904.50	116059.21	86162.92	169766.31	197029.44	30
31	50778.90	58943.69	116079.11	86148.15	169653.44	196932.20	29
32	50803.96	58982.89	116099.02	86133.37	169540.69	196835.07	28
33	50829.01	59022.11	116118.95	86118.59	169428.04	196738.05	27
34	50854.06	59061.34	116138.89	86103.80	169315.50	196641.14	26
35	50879.10	59100.58	116158.85	86089.00	169203.08	196544.34	25
36	50904.14	59139.83	116178.83	86074.20	169090.77	196447.67	24
37	50929.18	59179.10	116198.82	86059.39	168978.56	196351.10	23
38	50954.21	59218.39	116218.83	86044.57	168866.47	196254.64	22
39	50979.24	59257.68	116238.86	86029.74	168754.49	196158.29	21
40	51004.26	59296.99	116258.91	86014.91	168642.61	196062.06	20
41	51029.28	59336.32	116278.97	86000.07	168530.85	195965.93	19
42	51054.29	59375.66	116299.05	85985.22	168419.19	195869.92	18
43	51079.30	59415.01	116319.14	85970.37	168307.65	195774.01	17
44	51104.31	59454.37	116339.25	85955.51	168196.21	195678.22	16
45	51129.31	59493.75	116359.38	85940.64	168084.89	195582.54	15
46	51154.31	59533.14	116379.53	85925.76	167973.67	195486.97	14
47	51179.30	59572.54	116399.69	85910.88	167862.56	195391.50	13
48	51204.29	59611.96	116419.87	85895.99	167751.56	195296.15	12
49	51229.27	59651.40	116440.07	85881.09	167640.67	195200.91	11
50	51254.25	59690.84	116460.28	85866.18	167529.88	195105.77	10
51	51279.22	59730.30	116480.51	85851.27	167419.21	195010.75	9
52	51304.19	59769.78	116500.76	85836.35	167308.64	194915.83	8
53	51329.16	59809.27	116521.02	85821.42	167198.18	194821.02	7
54	51354.12	59848.77	116541.30	85806.49	167087.82	194726.32	6
55	51379.08	59888.28	116561.60	85791.55	166977.58	194631.73	5
56	51404.04	59927.81	116581.91	85776.60	166867.44	194537.25	4
57	51428.99	59967.35	116602.24	85761.64	166757.41	194442.88	3
58	51453.93	60006.91	116622.59	85746.68	166647.48	194348.61	2
59	51478.87	60046.48	116642.96	85731.71	166537.66	194254.45	1
60	51503.81	60086.06	116663.34	85716.73	166427.95	194160.40	0

31	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	51503.81	60086.06	116663.34	85716.73	166427.95	194160.40	60
1	51528.74	60125.66	116683.74	75701.74	166318.34	194066.46	59
2	51553.67	60165.27	116704.16	85686.75	166208.84	193972.62	58
3	51578.59	60204.90	116724.59	85671.75	166099.45	193878.89	57
4	51603.51	60244.54	116745.04	85656.74	165990.16	193785.27	56
5	51628.42	60284.19	116765.51	85641.73	165880.97	193691.76	55
6	51653.33	60323.86	116785.99	85626.71	165771.89	193598.35	54
7	51678.24	60363.54	116806.49	85611.68	165662.92	193505.05	53
8	51703.14	60403.23	116827.01	85596.64	165554.05	193411.85	52
9	51728.04	60442.94	116847.55	85581.60	165445.29	193318.76	51
10	51752.93	60482.66	116868.10	85566.55	165336.63	193225.78	50
11	51777.82	60522.40	116888.67	85551.49	165228.08	193132.90	49
12	51802.70	60562.15	116909.26	85536.42	165119.63	193040.13	48
13	51827.58	60601.92	116929.86	85521.35	165011.28	192947.46	47
14	51852.46	60641.70	116950.48	85506.27	164903.04	192854.90	46
15	51877.33	60681.49	116971.12	85491.18	164794.90	192762.44	45
16	51902.19	60721.30	116991.78	85476.09	164686.86	192670.09	44
17	51927.05	60761.12	117012.45	85460.99	164578.93	192577.84	43
18	51951.91	60800.95	117033.14	85445.88	164471.11	192485.70	42
19	51976.76	60840.80	117053.85	85430.76	164363.38	192393.66	41
20	52001.61	60880.67	117074.57	85415.64	164255.76	192301.73	40
21	52026.46	60920.54	117095.31	85400.51	164148.24	192209.90	39
22	52051.30	60960.43	117116.07	85385.37	164040.82	192118.17	38
23	52076.13	61000.34	117136.85	85370.23	163933.51	192026.55	37
24	52100.96	61040.26	117157.64	85355.08	163826.30	191935.03	36
25	52125.79	61080.19	117178.45	85339.92	163719.19	191843.62	35
26	52150.61	61120.14	117199.28	85324.75	163612.18	191752.30	34
27	52175.43	61160.11	117220.13	85309.58	163505.28	191661.00	33
28	52200.24	61200.08	117240.99	85294.40	163398.47	191569.99	32
29	52225.05	61240.07	117261.87	85279.21	163291.77	191478.99	31
30	52249.86	61280.08	117282.77	85264.02	163185.17	191388.09	30
31	52274.66	61320.10	117303.69	85248.81	163078.67	191297.29	29
32	52299.45	61360.13	117324.62	85233.60	162972.27	191206.59	28
33	52324.24	61400.18	117345.57	85218.38	162865.97	191116.00	27
34	52349.03	61440.24	117366.54	85203.16	162759.77	191025.51	26
35	52373.81	61480.32	117387.52	85187.93	162653.68	190935.12	25
36	52398.59	61520.41	117408.52	85172.69	162547.68	190844.83	24
37	52423.36	61560.52	117429.54	85157.44	162441.78	190754.64	23
38	52448.13	61600.64	117450.58	85142.19	162335.99	190664.56	22
39	52472.90	61640.77	117471.64	85126.93	162230.29	190574.57	21
40	52497.66	61680.92	117492.71	85111.66	162124.69	190484.69	20
41	52522.41	61721.08	117513.80	85096.39	162019.20	190394.91	19
42	52547.16	61761.26	117534.91	85081.11	161913.80	190305.22	18
43	52571.91	61801.45	117556.03	85065.82	161808.50	190215.64	17
44	52596.65	61841.66	117577.17	85050.52	161703.30	190126.16	16
45	52621.39	61881.88	117598.33	85035.22	161598.20	190036.78	15
46	52646.12	61922.11	117619.51	85019.91	161493.20	189947.50	14
47	52670.85	61962.36	117640.70	85004.59	161388.29	189858.32	13
48	52695.58	62002.63	117661.91	84989.27	161283.49	189769.24	12
49	52720.30	62042.91	117683.14	84973.94	161178.78	189680.26	11
50	52745.02	62083.20	117704.39	84958.60	161074.17	189591.38	10
51	52769.73	62123.51	117725.66	84943.25	160969.66	189502.59	9
52	52794.44	62163.83	117746.94	84927.90	160865.25	189413.91	8
53	52819.14	62204.17	117768.24	84912.54	160760.94	189325.32	7
54	52843.84	62244.52	117789.56	84897.17	160656.72	189236.84	6
55	52868.53	62284.88	117810.90	84881.79	160552.60	189148.45	5
56	52893.22	62325.26	117832.25	84866.41	160448.58	189060.16	4
57	52917.90	62365.66	117853.62	84851.02	160344.65	188971.97	3
58	52942.58	62406.07	117875.01	84835.62	160240.82	188883.88	2
59	52967.26	62446.50	117896.42	84820.22	160137.09	188795.89	1
60	52991.93	62486.94	117917.84	84804.81	160033.45	188707.99	0

32	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	52991.93	62486.94	117917.84	84804.81	160033.45	188707.99	60
1	53016.59	62527.39	117939.28	84789.39	159929.91	188620.19	59
2	53041.25	62567.86	117960.74	84773.96	159826.47	188532.49	58
3	53065.91	62608.34	117982.22	84758.53	159723.12	188444.89	57
4	53090.56	62648.84	118003.72	84743.09	159619.87	188357.38	56
5	53115.21	62689.35	118025.23	84727.64	159516.72	188269.97	55
6	53139.86	62729.88	118046.76	84712.19	159413.66	188182.66	54
7	53164.50	62770.42	118068.31	84696.73	159310.70	188095.45	53
8	53189.15	62810.98	118089.88	84681.26	159207.83	188008.33	52
9	53213.76	62851.56	118111.47	84665.78	159105.05	187921.31	51
10	53238.39	62892.15	118133.07	84650.30	159002.38	187834.38	50
11	53263.01	62932.75	118154.69	84634.81	158899.79	187747.55	49
12	53287.63	62973.36	118176.33	84619.31	158797.30	187660.82	48
13	53312.24	63013.99	118197.99	84603.81	158694.91	187574.18	47
14	53336.85	63054.64	118219.66	84588.30	158592.61	187487.64	46
15	53361.45	63095.30	118241.35	84572.78	158490.41	187401.20	45
16	53386.05	63135.98	118263.06	84557.25	158388.30	187314.85	44
17	53410.64	63176.67	118284.79	84541.72	158286.28	187228.59	43
18	53435.23	63217.38	118306.54	84526.18	158184.36	187142.43	42
19	53459.82	63258.10	118328.30	84510.63	158082.53	187056.37	41
20	53484.40	63298.83	118350.08	84495.08	157980.79	186970.40	40
21	53508.98	63339.58	118371.88	84479.52	157879.15	186884.53	39
22	53533.55	63380.35	118393.70	84463.95	157777.60	186798.75	38
23	53558.12	63421.13	118415.54	84448.37	157676.15	186713.06	37
24	53582.68	63461.93	118437.40	84432.79	157574.79	186627.47	36
25	53607.24	63502.74	118459.27	84417.20	157473.52	186541.97	35
26	53631.79	63543.57	118481.16	84401.60	157372.34	186456.57	34
27	53656.34	63584.41	118503.07	84386.00	157271.26	186371.26	33
28	53680.88	63625.27	118525.00	84370.39	157170.26	186286.05	32
29	53705.42	63666.14	118546.94	84354.77	157069.36	186200.93	31
30	53729.96	63707.03	118568.91	84339.14	156968.56	186115.90	30
31	53754.49	63747.93	118590.89	84323.51	156867.84	186030.96	29
32	53779.02	63788.85	118612.89	84307.87	156767.22	185946.12	28
33	53803.54	63829.78	118634.91	84292.22	156666.69	185861.38	27
34	53828.06	63870.73	118656.95	84276.57	156566.25	185776.72	26
35	53852.57	63911.69	118679.00	84260.91	156465.90	185692.16	25
36	53877.08	63952.67	118701.07	84245.24	156365.64	185607.69	24
37	53901.58	63993.66	118723.16	84229.56	156265.48	185523.31	23
38	53926.08	64034.67	118745.27	84213.88	156165.40	185439.03	22
39	53950.58	64075.69	118767.40	84198.19	156065.42	185354.83	21
40	53975.07	64116.73	118789.55	84182.49	155965.52	185270.73	20
41	53999.55	64157.79	118811.71	84166.79	155865.72	185186.72	19
42	54024.03	64198.86	118833.89	84151.08	155766.01	185102.81	18
43	54048.51	64239.95	118856.09	84135.36	155666.39	185018.98	17
44	54072.98	64281.05	118878.31	84119.63	155566.85	184935.25	16
45	54097.45	64322.16	118900.55	84103.90	155467.41	184851.61	15
46	54121.91	64363.29	118922.81	84088.16	155368.06	184768.05	14
47	54146.37	64404.44	118945.08	84072.41	155268.80	184684.59	13
48	54170.82	64445.60	118967.37	84056.66	155169.63	184601.23	12
49	54195.27	64486.78	118989.68	84040.90	155070.54	184517.95	11
50	54219.71	64527.97	119012.01	84025.13	154971.55	184434.76	10
51	54244.15	64569.18	119034.36	84009.35	154872.64	184351.66	9
52	54268.59	64610.41	119056.73	83993.57	154773.83	184268.66	8
53	54293.02	64651.65	119079.12	83977.78	154675.10	184185.74	7
54	54317.44	64692.90	119101.52	83961.98	154576.46	184102.92	6
55	54341.86	64734.17	119123.94	83946.18	154477.92	184020.18	5
56	54366.28	64775.46	119146.38	83930.37	154379.46	183937.53	4
57	54390.69	64816.76	119168.84	83914.55	154281.08	183854.98	3
58	54415.10	64858.08	119191.32	83898.73	154182.80	183772.51	2
59	54439.50	64899.41	119213.82	83882.90	154084.60	183690.13	1
60	54463.90	64940.76	119236.33	83867.06	153986.50	183607.84	0

33	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	54463.90	64940.76	119236.33	83867.06	153986.50	183607.84	60
1	54488.30	64982.12	119258.86	83851.21	153888.48	183525.64	59
2	54512.69	65023.50	119281.41	83835.36	153790.55	183443.53	58
3	54537.07	65064.90	119303.98	83819.50	153692.70	183361.51	57
4	54561.45	65106.31	119326.57	83803.63	153594.94	183279.58	56
5	54585.83	65147.74	119349.18	83787.75	153497.27	183197.74	55
6	54610.20	65189.18	119371.81	83771.87	153399.69	183115.99	54
7	54634.56	65230.64	119394.46	83755.98	153302.20	183034.32	53
8	54658.92	65272.11	119417.12	83740.08	153204.79	182952.74	52
9	54683.28	65313.60	119439.80	83724.18	153107.47	182871.25	51
10	54707.63	65355.11	119462.50	83708.27	153010.23	182789.85	50
11	54731.98	65396.63	119485.22	83692.35	152913.08	182708.54	49
12	54756.32	65438.17	119507.96	83676.43	152816.02	182627.31	48
13	54780.66	65479.72	119530.72	83660.50	152719.04	182546.17	47
14	54804.99	65521.29	119553.50	83644.56	152622.15	182465.12	46
15	54829.32	65562.87	119576.30	83628.61	152525.35	182384.16	45
16	54853.65	65604.47	119599.11	83612.66	152428.63	182303.28	44
17	54877.97	65646.09	119621.94	83596.70	152332.00	182222.49	43
18	54902.28	65687.72	119644.79	83580.73	152235.45	182141.79	42
19	54926.59	65729.37	119667.66	83564.76	152138.99	182061.18	41
20	54950.90	65771.03	119690.55	83548.78	152042.61	181980.65	40
21	54975.20	65812.71	119713.46	83532.79	151946.32	181900.21	39
22	54999.50	65854.41	119736.39	83516.80	151850.12	181819.85	38
23	55023.79	65896.12	119759.34	83500.80	151754.00	181739.58	37
24	55048.08	65937.85	119782.31	83484.79	151657.96	181659.40	36
25	55072.36	65979.59	119805.29	83468.77	151562.01	181579.30	35
26	55096.64	66021.35	119828.29	83452.75	151466.14	181499.29	34
27	55120.91	66063.13	119851.31	83436.72	151370.36	181419.37	33
28	55145.18	66104.92	119874.35	83420.68	151274.66	181339.53	32
29	55169.44	66146.73	119897.41	83404.63	151179.05	181259.77	31
30	55193.70	66188.56	119920.49	83388.58	151083.52	181180.10	30
31	55217.95	66230.40	119943.59	83372.52	150988.07	181100.52	29
32	55242.20	66272.26	119966.71	83356.45	150892.71	181021.02	28
33	55266.45	66314.13	119989.85	83340.38	150797.43	180941.61	27
34	55290.69	66356.02	120013.01	83324.30	150702.24	180862.28	26
35	55314.92	66397.92	120036.19	83308.21	150607.13	180783.04	25
36	55339.15	66439.84	120059.38	83292.12	150512.10	180703.88	24
37	55363.38	66481.78	120082.59	83276.02	150417.16	180624.81	23
38	55387.60	66523.73	120105.82	83259.91	150322.30	180545.82	22
39	55411.82	66565.70	120129.07	83243.80	150227.52	180466.91	21
40	55436.03	66607.69	120152.34	83227.68	150132.82	180388.09	20
41	55460.24	66649.69	120175.63	83211.55	150038.20	180309.35	19
42	55484.44	66691.71	120198.94	83195.41	149943.67	180230.70	18
43	55508.64	66733.75	120222.27	83179.27	149849.22	180152.13	17
44	55532.83	66775.80	120245.62	83163.12	149754.86	180073.65	16
45	55557.02	66817.87	120268.99	83146.96	149660.58	179995.25	15
46	55581.21	66859.95	120292.37	83130.79	149566.38	179916.93	14
47	55605.39	66902.05	120315.77	83114.62	149472.26	179838.69	13
48	55629.56	66944.17	120339.19	83098.44	149378.22	179760.54	12
49	55653.73	66986.30	120362.64	83082.26	149284.26	179682.47	11
50	55677.90	67028.45	120386.10	83066.07	149190.38	179604.48	10
51	55702.06	67070.62	120409.58	83049.87	149096.59	179526.58	9
52	55726.21	67112.80	120433.08	83033.66	149002.88	179448.76	8
53	55750.36	67155.00	120456.60	83017.45	148909.25	179371.02	7
54	55774.51	67197.21	120480.14	83001.23	148815.70	179293.37	6
55	55798.65	67239.44	120503.70	82985.00	148722.23	179215.80	5
56	55822.79	67281.69	120527.28	82968.76	148628.84	179138.31	4
57	55846.92	67323.96	120550.88	82952.52	148535.53	179060.90	3
58	55871.05	67366.24	120574.50	82936.27	148442.30	178983.58	2
59	55895.17	67408.54	120598.14	82920.02	148349.16	178906.33	1
60	55919.29	67450.85	120621.80	82903.76	148256.10	178829.16	0

34	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	55919.29	67450.85	120621.80	82903.76	148256.10	178829.16	60
1	55943.40	67495.18	120645.48	82887.49	148163.11	178732.08	59
2	55967.51	67535.53	120669.18	82871.21	148070.21	178675.08	58
3	55991.61	67577.90	120692.89	82854.93	147977.38	178598.17	57
4	56015.71	67620.28	120716.62	82838.64	147884.63	178521.33	56
5	56039.81	67662.68	120740.37	82822.34	147791.97	178444.57	55
6	56063.90	67705.09	120764.14	82806.03	147699.38	178367.90	54
7	56087.98	67747.52	120787.93	82789.72	147606.88	178291.31	53
8	56112.06	67789.97	120811.75	82773.40	147514.45	178214.79	52
9	56136.14	67832.44	120835.59	82757.07	147422.10	178138.36	51
10	56160.21	67874.92	120859.44	82740.74	147329.83	178062.01	50
11	56184.28	67917.42	120883.31	82724.40	147237.64	177985.74	49
12	56208.34	67959.93	120907.20	82708.05	147145.53	177909.55	48
13	56232.39	68002.46	120931.12	82691.70	147053.50	177833.43	47
14	56256.44	68045.01	120955.05	82675.34	146961.55	177757.40	46
15	56280.49	68087.58	120979.00	82658.97	146869.67	177681.45	45
16	56304.53	68130.16	121002.97	82642.60	146777.87	177605.58	44
17	56328.57	68172.76	121026.96	82626.22	146686.16	177529.79	43
18	56352.60	68215.38	121050.97	82609.83	146594.52	177454.08	42
19	56376.63	68258.01	121075.00	82593.43	146502.96	177378.45	41
20	56400.65	68300.66	121099.05	82577.03	146411.47	177302.90	40
21	56424.67	68343.33	121123.12	82560.62	146320.07	177227.43	39
22	56448.69	68386.01	121147.21	82544.20	146228.74	177152.04	38
23	56472.70	68428.71	121171.32	82527.78	146137.49	177076.73	37
24	56496.70	68471.43	121195.45	82511.35	146046.32	177001.49	36
25	56520.70	68514.17	121219.60	82494.91	145955.22	176926.33	35
26	56544.69	68556.92	121243.77	82478.47	145864.20	176851.25	34
27	56568.68	68599.69	121267.96	82462.02	145773.26	176776.25	33
28	56592.67	68642.47	121292.17	82445.56	145682.40	176701.33	32
29	56616.65	68685.27	121316.40	82429.09	145591.61	176626.49	31
30	56640.62	68728.10	121340.64	82412.62	145500.90	176551.73	30
31	56664.59	68770.94	121364.91	82396.14	145410.27	176477.04	29
32	56688.56	68813.79	121389.20	82379.65	145319.71	176402.43	28
33	56712.52	68856.66	121413.51	82363.16	145229.23	176327.91	27
34	56736.48	68899.55	121437.83	82346.66	145138.83	176253.45	26
35	56760.43	68942.46	121462.18	82330.15	145048.50	176179.08	25
36	56784.37	68985.38	121486.55	82313.64	144958.25	176104.78	24
37	56808.31	69028.32	121510.94	82297.12	144868.08	176030.56	23
38	56832.25	69071.28	121535.35	82280.59	144777.98	175956.42	22
39	56856.18	69114.25	121559.78	82264.05	144687.96	175882.36	21
40	56880.11	69157.24	121584.23	82247.51	144598.01	175808.37	20
41	56904.03	69200.25	121608.70	82230.96	144508.14	175734.46	19
42	56927.95	69243.28	121633.19	82214.40	144418.34	175660.63	18
43	56951.86	69286.33	121657.70	82197.84	144328.62	175586.87	17
44	56975.77	69329.39	121682.23	82181.27	144238.97	175513.19	16
45	56999.68	69372.47	121706.78	82164.69	144149.40	175439.59	15
46	57023.58	69415.57	121731.35	82148.11	144059.91	175366.07	14
47	57047.47	69458.68	121755.94	82131.52	143970.49	175292.62	13
48	57071.36	69501.81	121780.55	82114.92	143881.14	175219.24	12
49	57095.24	69544.96	121805.18	82098.31	143791.87	175144.94	11
50	57119.12	69588.13	121829.83	82081.70	143702.68	175072.73	10
51	57142.99	69631.31	121854.50	82065.08	143613.56	174999.58	9
52	57166.86	69674.51	121879.19	82048.46	143524.51	174926.51	8
53	57190.73	69717.73	121903.90	82031.83	143435.54	174853.52	7
54	57214.59	69760.97	121928.64	82015.19	143346.64	174779.60	6
55	57238.44	69804.22	121953.39	81998.54	143257.81	174707.76	5
56	57262.29	69847.49	121978.16	81981.89	143169.06	174634.99	4
57	57286.14	69890.78	122002.96	81965.23	143080.39	174562.30	3
58	57309.98	69934.09	122027.77	81948.56	142991.78	174489.69	2
59	57333.81	69977.41	122052.60	81931.89	142903.26	174417.15	1
60	57357.64	70020.75	122077.46	81915.21	142814.80	174344.68	0

35	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	57357.64	70020.75	122077.46		81915.21	142814.80	174344.68	60
1	57381.47	70064.11	122102.33		81898.52	142726.42	174272.29	59
2	57405.29	70107.49	122127.23		81881.82	142638.11	174199.97	58
3	57429.11	70150.89	122152.15		81865.12	142549.87	174127.73	57
4	57452.92	70194.30	122177.08		81848.41	142461.71	174055.56	56
5	57476.72	70237.73	122202.04		81831.69	142373.62	173983.47	55
6	57500.52	70281.18	122227.02		81814.97	142285.61	173911.45	54
7	57524.32	70324.65	122252.02		81798.24	142197.66	173839.51	53
8	57548.11	70368.13	122277.03		81781.50	142109.79	173767.64	52
9	57571.90	70411.63	122302.07		81764.76	142022.00	173695.85	51
10	57595.68	70455.15	122327.13		81748.01	141934.27	173624.13	50
11	57619.46	70498.69	122352.21		81731.25	141846.62	173552.47	49
12	57643.23	70542.24	122377.32		81714.49	141759.04	173480.90	48
13	57667.00	70585.81	122402.44		81697.72	141671.53	173409.41	47
14	57690.76	70629.40	122427.58		81680.94	141584.09	173337.98	46
15	57714.52	70673.01	122452.74		81664.15	141496.73	173266.63	45
16	57738.27	70716.64	122477.93		81647.36	141409.43	173195.35	44
17	57762.02	70760.29	122503.13		81630.56	141322.21	173124.14	43
18	57785.76	70803.95	122528.36		81613.76	141235.06	173053.01	42
19	57809.50	70847.63	122553.61		81596.95	141147.99	172981.95	41
20	57833.23	70891.33	122578.87		81580.13	141060.98	172910.96	40
21	57856.96	70935.05	122604.16		81563.30	140974.05	172840.05	39
22	57880.68	70978.78	122629.47		81546.47	140887.18	172769.21	38
23	57904.40	71022.53	122654.80		81529.63	140800.39	172698.44	37
24	57928.12	71066.30	122680.15		81512.78	140713.67	172627.74	36
25	57951.83	71110.09	122705.52		81495.93	140627.02	172557.12	35
26	57975.53	71153.90	122730.91		81479.06	140540.44	172486.57	34
27	57999.23	71197.73	122756.33		81462.19	140453.93	172416.09	33
28	58022.92	71241.57	122781.76		81445.32	140367.49	172345.68	32
29	58046.61	71285.43	122807.21		81428.44	140281.13	172275.34	31
30	58070.30	71329.31	122832.69		81411.55	140194.83	172205.08	30
31	58093.98	71373.21	122858.19		81394.65	140108.60	172134.89	29
32	58117.65	71417.13	122883.71		81377.75	140022.45	172064.77	28
33	58141.32	71461.06	122909.25		81360.84	139936.36	171994.72	27
34	58164.98	71505.01	122934.81		81343.93	139850.34	171924.75	26
35	58188.64	71548.98	122960.39		81327.01	139764.40	171854.84	25
36	58212.30	71592.97	122985.99		81310.08	139678.52	171785.01	24
37	58235.95	71636.98	123011.61		81293.14	139592.72	171715.25	23
38	58259.59	71681.01	123037.25		81276.20	139506.98	171645.56	22
39	58283.23	71725.05	123062.92		81259.25	139421.31	171575.94	21
40	58306.87	71769.11	123088.61		81242.29	139335.71	171506.39	20
41	58330.50	71813.19	123114.32		81225.32	139250.18	171436.91	19
42	58354.12	71857.29	123140.05		81208.35	139164.75	171367.50	18
43	58377.74	71901.41	123165.80		81191.37	139079.34	171298.17	17
44	58401.36	71945.55	123191.57		81174.39	138994.01	171228.90	16
45	58424.97	71989.70	123217.36		81157.40	138908.76	171159.70	15
46	58448.57	72033.87	123243.17		81140.40	138823.58	171090.58	14
47	58472.17	72078.06	123269.00		81123.39	138738.46	171021.52	13
48	58495.77	72122.27	123294.86		81106.38	138653.42	170952.54	12
49	58519.36	72166.50	123320.74		81089.36	138568.44	170883.62	11
50	58542.94	72210.75	123346.64		81072.33	138483.53	170814.78	10
51	58566.52	72255.02	123372.56		81055.30	138398.69	170746.00	9
52	58590.10	72299.31	123398.50		81038.26	138313.92	170677.30	8
53	58613.67	72343.61	123424.46		81021.21	138229.22	170608.66	7
54	58637.24	72387.93	123450.44		81004.16	138144.58	170540.10	6
55	58660.80	72432.27	123476.45		80987.10	138060.01	170471.60	5
56	58684.35	72476.63	123502.48		80970.03	137975.51	170403.18	4
57	58707.90	72521.01	123528.52		80952.96	137891.08	170334.82	3
58	58731.45	72565.41	123554.59		80935.88	137806.72	170266.53	2
59	58754.99	72609.83	123580.68		80918.79	137722.42	170198.31	1
60	58778.53	72654.26	123606.80		80901.70	137638.19	170130.16	0

36	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	58778.53	72654.26	123606.80	80901.70	137638.19	170130.16	60
1	58802.06	72698.71	123632.94	80884.60	137554.03	170062.08	59
2	58825.58	72743.18	123659.09	80867.49	137469.94	169994.07	58
3	58849.10	72787.67	123685.26	80850.37	137385.91	169926.12	57
4	58872.62	72832.18	123711.48	80833.25	137301.95	169858.25	56
5	58896.13	72876.71	123737.68	80816.12	137218.05	169790.44	55
6	58919.64	72921.26	123763.93	80798.99	137134.23	169722.71	54
7	58943.14	72965.82	123790.19	80781.85	137050.47	169655.04	53
8	58966.63	73010.40	123816.47	80764.70	136966.78	169587.43	52
9	58990.12	73055.01	123842.78	80747.54	136883.15	169519.90	51
10	59013.61	73099.63	123869.11	80730.38	136799.59	169452.44	50
11	59037.09	73144.27	123895.46	80713.21	136716.10	169385.04	49
12	59060.57	73188.94	123921.83	80696.03	136632.67	169317.71	48
13	59084.04	73233.62	123948.22	80678.85	136549.31	169250.45	47
14	59107.50	73278.31	123974.64	80661.66	136466.02	169183.26	46
15	59130.96	73323.03	124001.08	80644.46	136382.79	169116.13	45
16	59154.42	73367.77	124027.54	80627.26	136299.63	169049.07	44
17	59177.87	73412.53	124054.02	80610.05	136216.53	168982.08	43
18	59201.32	73457.30	124080.52	80592.83	136133.50	168915.16	42
19	59224.76	73502.10	124107.04	80575.60	136050.54	168848.30	41
20	59248.19	73546.91	124133.59	80558.37	135967.64	168781.51	40
21	59271.62	73591.74	124160.16	80541.13	135884.81	168714.79	39
22	59295.05	73636.60	124186.75	80523.89	135802.04	168648.14	38
23	59318.47	73681.47	124213.36	80506.64	135719.34	168581.55	37
24	59341.89	73726.36	124239.99	80489.38	135636.70	168515.03	36
25	59365.30	73771.27	124266.65	80472.11	135554.13	168448.57	35
26	59388.71	73816.20	124293.33	80454.84	135471.62	168382.18	34
27	59412.11	73861.15	124320.03	80437.56	135389.18	168315.86	33
28	59435.50	73906.11	124346.75	80420.28	135306.80	168249.61	32
29	59458.89	73951.10	124373.49	80402.99	135224.49	168183.42	31
30	59482.28	73996.11	124400.26	80385.69	135142.24	168117.30	30
31	59505.66	74041.14	124427.05	80368.38	135060.06	168051.24	29
32	59529.03	74086.18	124453.86	80351.07	134977.94	167985.25	28
33	59552.40	74131.24	124480.69	80333.75	134895.89	167919.33	27
34	59575.77	74176.33	124507.54	80316.42	134813.90	167853.47	26
35	59599.13	74221.43	124534.42	80299.09	134731.97	167787.68	25
36	59622.49	74266.55	124561.31	80281.75	134650.11	167721.95	24
37	59645.84	74311.70	124588.23	80264.40	134568.32	167656.29	23
38	59669.18	74356.86	124615.18	80247.05	134486.58	167590.70	22
39	59692.52	74402.04	124642.14	80229.69	134404.92	167525.17	21
40	59715.86	74447.24	124669.13	80212.32	134323.31	167459.70	20
41	59739.19	74492.46	124696.14	80194.94	134241.77	167394.30	19
42	59762.51	74537.70	124723.17	80177.56	134160.29	167328.97	18
43	59785.83	74582.96	124750.22	80160.17	134078.88	167263.70	17
44	59809.15	74628.24	124777.30	80142.78	133997.53	167198.50	16
45	59832.46	74673.54	124804.40	80125.38	133916.24	167133.36	15
46	59855.76	74718.86	124831.52	80107.97	133835.02	167068.28	14
47	59879.06	74764.20	124858.66	80090.56	133753.86	167003.28	13
48	59902.36	74809.56	124885.83	80073.14	133672.76	166938.33	12
49	59925.65	74854.94	124913.02	80055.71	133591.72	166873.45	11
50	59948.93	74900.33	124940.23	80038.27	133510.75	166808.64	10
51	59972.21	74945.75	124967.46	80020.83	133429.84	166743.89	9
52	59995.49	74991.19	124994.71	80003.38	133349.00	166679.20	8
53	60018.76	75036.65	125021.99	79985.93	133268.22	166614.58	7
54	60042.02	75082.12	125049.29	79968.47	133187.49	166550.02	6
55	60065.28	75127.62	125076.61	79951.00	133106.84	166485.52	5
56	60088.53	75173.14	125103.96	79933.52	133026.24	166421.09	4
57	60111.78	75218.67	125131.33	79916.04	132945.71	166356.73	3
58	60135.03	75264.23	125158.72	79898.55	132865.24	166292.43	2
59	60158.27	75309.81	125186.13	79881.05	132784.83	166228.19	1
60	60181.50	75355.40	125213.57	79863.55	132704.48	166164.01	0

37	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	60181.50	75355.40	125213.57		79863.55	132704.48	166164.01	60
1	60204.73	75401.02	125241.02		79846.04	132624.20	166099.90	59
2	60227.95	75446.66	125268.50		79828.52	132543.97	166035.85	58
3	60251.17	75492.32	125296.01		79811.00	132463.81	165971.87	57
4	60274.39	75537.99	125323.53		79793.47	132383.71	165907.95	56
5	60297.60	75583.69	125351.08		79775.93	132303.68	165844.09	55
6	60320.80	75629.41	125378.65		79758.39	132223.70	165780.30	54
7	60344.00	75675.14	125406.25		79740.84	132143.79	165716.57	53
8	60367.19	75720.90	125433.87		79723.28	132063.93	165652.90	52
9	60390.38	75766.68	125461.51		79705.72	131984.14	165589.29	51
10	60413.56	75812.48	125489.17		79688.15	131904.41	165525.75	50
11	60436.74	75858.29	125516.85		79670.57	131824.74	165462.27	49
12	60459.91	75904.13	125544.56		79652.99	131745.13	165398.85	48
13	60483.08	75949.99	125572.29		79635.40	131665.59	165335.50	47
14	60506.24	75995.87	125600.05		79617.80	131586.10	165272.21	46
15	60529.40	76041.77	125627.82		79600.20	131506.68	165208.98	45
16	60552.55	76087.69	125655.62		79582.59	131427.31	165145.81	44
17	60575.70	76133.63	125683.45		79564.97	131348.01	165082.70	43
18	60598.84	76179.59	125711.29		79547.35	131268.76	165019.66	42
19	60621.98	76225.57	125739.16		79529.72	131189.58	164956.68	41
20	60645.11	76271.57	125767.05		79512.08	131110.46	164893.76	40
21	60668.23	76317.59	125794.97		79494.43	131031.40	164830.90	39
22	60691.35	76363.63	125822.91		79476.78	130952.39	164768.11	38
23	60714.47	76409.69	125850.87		79459.12	130873.45	164705.37	37
24	60737.58	76455.77	125878.85		79441.46	130794.57	164642.70	36
25	60760.69	76501.88	125906.86		79423.79	130715.75	164580.09	35
26	60783.79	76548.00	125934.89		79406.11	130636.99	164517.54	34
27	60806.89	76594.14	125962.94		79388.43	130558.28	164455.06	33
28	60829.98	76640.31	125991.02		79370.74	130479.64	164392.63	32
29	60853.06	76686.49	126019.12		79353.04	130401.06	164330.27	31
30	60876.14	76732.70	126047.24		79335.33	130322.54	164267.96	30
31	60899.22	76778.93	126075.39		79317.62	130244.07	164205.72	29
32	60922.29	76825.17	126103.56		79299.90	130165.67	164143.54	28
33	60945.35	76871.44	126131.75		79282.18	130087.32	164081.42	27
34	60968.41	76917.73	126159.97		79264.45	130009.04	164019.36	26
35	60991.47	76964.04	126188.20		79246.71	129930.81	163957.36	25
36	61014.52	77010.37	126216.46		79228.96	129852.65	163895.42	24
37	61037.56	77056.72	126244.75		79211.21	129774.54	163833.55	23
38	61060.60	77103.09	126273.06		79193.45	129696.49	163771.73	22
39	61083.63	77149.48	126301.40		79175.69	129618.50	163709.97	21
40	61106.66	77195.89	126329.75		79157.92	129540.57	163648.28	20
41	61129.68	77242.33	126358.13		79140.14	129462.69	163586.64	19
42	61152.70	77288.79	126386.53		79122.35	129384.88	163525.07	18
43	61175.72	77335.26	126414.96		79104.56	129307.12	163463.55	17
44	61198.73	77381.75	126443.41		79086.76	129229.43	163402.10	16
45	61221.73	77428.27	126471.88		79068.96	129151.79	163340.70	15
46	61244.73	77474.81	126500.38		79051.15	129074.21	163279.37	14
47	61267.72	77521.37	126528.90		79033.33	128996.69	163218.09	13
48	61290.71	77567.95	126557.45		79015.50	128919.22	163156.88	12
49	61313.69	77614.55	126586.01		78997.67	128841.82	163095.72	11
50	61336.66	77661.17	126614.60		78979.83	128764.47	163034.62	10
51	61359.63	77707.82	126643.22		78961.98	128687.18	162973.59	9
52	61382.60	77754.48	126671.86		78944.13	128609.95	162912.61	8
53	61405.56	77801.17	126700.52		78926.27	128532.77	162851.69	7
54	61428.52	77847.88	126729.21		78908.41	128455.66	162790.83	6
55	61451.47	77894.60	126757.92		78890.54	128378.60	162730.03	5
56	61474.42	77941.35	126786.65		78872.66	128301.60	162669.29	4
57	61497.36	77988.12	126815.41		78854.77	128224.66	162608.61	3
58	61520.29	78034.92	126844.19		78836.88	128147.76	162547.99	2
59	61543.22	78081.73	126872.99		78818.98	128070.93	162487.43	1
60	61566.15	78128.56	126901.82		78801.07	127994.16	162426.92	0

38	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	61566.15	78128.56	126901.82	78801.07	127994.16	162426.92	60
1	61589.07	78175.42	126930.67	78783.16	127917.45	162366.48	59
2	61611.98	78222.29	126959.55	78765.24	127840.79	162306.09	58
3	61634.89	78269.19	126988.45	78747.32	127764.19	162245.76	57
4	61657.79	78316.11	127017.37	78729.39	127687.64	162185.49	56
5	61680.69	78363.05	127046.32	78711.45	127611.16	162125.28	55
6	61703.59	78410.02	127075.29	78693.50	127534.73	162065.13	54
7	61726.48	78457.00	127104.29	78675.55	127458.36	162005.04	53
8	61749.36	78504.00	127133.31	78657.59	127382.04	161945.00	52
9	61772.24	78551.03	127162.35	78639.62	127305.78	161885.02	51
10	61795.11	78598.08	127191.42	78621.65	127229.57	161825.10	50
11	61817.98	78645.15	127220.51	78603.67	127153.42	161765.24	49
12	61840.84	78692.24	127249.63	78585.69	127077.33	161705.44	48
13	61863.70	78739.35	127278.77	78567.70	127001.30	161645.69	47
14	61886.55	78786.49	127307.94	78549.70	126925.32	161586.00	46
15	61909.40	78833.64	127337.12	78531.69	126849.39	161526.37	45
16	61932.24	78880.82	127366.34	78513.68	126773.53	161466.80	44
17	61955.07	78928.02	127395.57	78495.66	126697.72	161407.28	43
18	61977.90	78975.24	127424.84	78477.64	126621.96	161347.83	42
19	62000.73	79022.48	127454.12	78459.61	126546.26	161288.43	41
20	62023.55	79069.75	127483.43	78441.57	126470.62	161229.08	40
21	62046.36	79117.03	127512.76	78423.52	126395.03	161169.80	39
22	62069.17	79164.34	127542.12	78405.47	126319.50	161110.57	38
23	62091.98	79211.67	127571.50	78387.41	126244.02	161051.40	37
24	62114.78	79259.02	127600.91	78369.35	126168.60	160992.28	36
25	62137.57	79306.40	127630.34	78351.28	126093.23	160933.23	35
26	62160.36	79353.79	127659.80	78333.20	126017.92	160874.23	34
27	62183.14	79401.21	127689.28	78315.11	125942.67	160815.28	33
28	62205.92	79448.65	127718.78	78297.02	125867.47	160756.40	32
29	62228.69	79496.11	127748.31	78278.92	125792.32	160697.57	31
30	62251.46	79543.59	127777.87	78260.82	125717.23	160638.79	30
31	62274.22	79591.10	127807.45	78242.71	125642.19	160580.08	29
32	62296.98	79638.62	127837.05	78224.59	125567.21	160521.42	28
33	62319.73	79686.17	127866.67	78206.46	125492.29	160462.81	27
34	62342.48	79733.74	127896.32	78188.33	125417.42	160404.26	26
35	62365.22	79781.34	127926.00	78170.19	125342.60	160345.77	25
36	62387.96	79828.95	127955.70	78152.05	125267.84	160287.34	24
37	62410.69	79876.59	127985.43	78133.90	125193.13	160228.96	23
38	62433.42	79924.25	128015.18	78115.74	125118.48	160170.64	22
39	62456.14	79971.93	128044.95	78097.57	125043.88	160112.37	21
40	62478.85	80019.63	128074.75	78079.40	124969.33	160054.16	20
41	62501.56	80067.36	128104.57	78061.22	124894.84	159996.00	19
42	62524.26	80115.11	128134.42	78043.04	124820.40	159937.90	18
43	62546.96	80162.88	128164.30	78024.85	124746.02	159879.86	17
44	62569.66	80210.67	128194.20	78006.65	124671.69	159821.87	16
45	62592.35	80258.48	128224.12	77988.45	124597.42	159763.94	15
46	62615.03	80306.32	128254.07	77970.24	124523.20	159706.06	14
47	62637.71	80354.18	128284.04	77952.02	124449.03	159648.24	13
48	62660.38	80402.06	128314.04	77933.80	124374.92	159590.47	12
49	62683.05	80449.97	128344.06	77915.57	124300.86	159532.76	11
50	62705.71	80497.90	128374.11	77897.33	124226.85	159475.11	10
51	62728.37	80545.85	128404.18	77879.08	124152.90	159417.51	9
52	62751.02	80593.82	128434.28	77860.83	124079.00	159359.96	8
53	62773.66	80641.81	128464.40	77842.57	124005.15	159302.47	7
54	62796.30	80689.83	128494.55	77824.31	123931.36	159245.04	6
55	62818.94	80737.87	128524.72	77806.04	123857.62	159187.66	5
56	62841.57	80785.93	128554.92	77787.77	123783.93	159130.33	4
57	62864.20	80834.01	128585.14	77769.49	123710.30	159073.06	3
58	62886.82	80882.12	128615.39	77751.20	123636.72	159015.84	2
59	62909.43	80930.25	128645.66	77732.90	123563.19	158958.68	1
60	62932.04	80978.40	128675.96	77714.60	123489.72	158901.57	0

39	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	62932.04	80978.40	128675.96		77714.60	123489.72	158901.57	60
1	62954.64	81026.58	128706.28		77696.29	123416.29	158844.52	59
2	62977.24	81074.78	128736.63		77677.97	123342.92	158787.52	58
3	62999.83	81123.00	128767.00		77659.65	123269.61	158730.58	57
4	63022.42	81171.24	128797.40		77641.32	123196.34	158673.69	56
5	63045.00	81219.51	128827.82		77622.98	123123.13	158616.85	55
6	63067.58	81267.80	128858.27		77604.64	123049.97	158560.07	54
7	63090.15	81316.11	128888.75		77586.29	122976.87	158503.34	53
8	63112.72	81364.44	128919.25		77567.94	122903.81	158446.67	52
9	63135.28	81412.80	128949.77		77549.58	122830.81	158390.05	51
10	63157.84	81461.18	128980.32		77531.21	122757.86	158333.48	50
11	63180.39	81509.58	129010.90		77512.83	122684.96	158276.97	49
12	63202.93	81558.01	129041.50		77494.45	122612.11	158220.51	48
13	63225.47	81606.46	129072.13		77476.06	122539.32	158164.11	47
14	63248.00	81654.93	129102.78		77457.67	122466.58	158107.76	46
15	63270.53	81703.43	129133.49		77439.27	122393.89	158051.46	45
16	63293.05	81751.95	129164.16		77420.86	122321.25	157995.21	44
17	63315.57	81800.49	129194.89		77402.44	122248.66	157939.02	43
18	63338.08	81849.05	129225.64		77384.02	122176.13	157882.89	42
19	63360.59	81897.64	129256.42		77365.59	122103.64	157826.80	41
20	63383.09	81946.25	129287.23		77347.16	122031.21	157770.77	40
21	63405.59	81994.88	129318.06		77328.72	121958.83	157714.79	39
22	63428.08	82043.54	129348.92		77310.27	121886.50	157658.87	38
23	63450.57	82092.22	129379.80		77291.82	121814.22	157603.00	37
24	63473.05	82140.93	129410.71		77273.36	121741.99	157547.18	36
25	63495.53	82189.65	129441.64		77254.89	121669.82	157491.41	35
26	63518.00	82238.40	129472.60		77236.42	121597.69	157435.70	34
27	63540.46	82287.18	129503.59		77217.94	121525.62	157380.04	33
28	63562.92	82335.97	129534.60		77199.45	121453.59	157324.43	32
29	63585.37	82384.79	129565.64		77180.96	121381.62	157268.87	31
30	63607.82	82433.64	129596.70		77162.46	121309.70	157213.37	30
31	63630.26	82482.51	129627.79		77143.95	121237.83	157157.92	29
32	63652.70	82531.40	129658.90		77125.44	121166.01	157102.52	28
33	63675.13	82580.31	129690.04		77106.92	121094.24	157047.17	27
34	63697.56	82629.25	129721.21		77088.39	121022.52	156991.88	26
35	63719.98	82678.21	129752.40		77069.86	120950.85	156936.64	25
36	63742.40	82727.19	129783.62		77051.32	120879.23	156881.45	24
37	63764.81	82776.20	129814.87		77032.78	120807.67	156826.31	23
38	63787.21	82825.23	129846.14		77014.23	120736.15	156771.23	22
39	63809.61	82874.29	129877.44		76995.67	120664.68	156716.19	21
40	63832.01	82923.37	129908.76		76977.10	120593.27	156661.21	20
41	63854.40	82972.47	129940.11		76958.53	120521.90	156606.28	19
42	63876.78	83021.60	129971.48		76939.95	120450.58	156551.41	18
43	63899.16	83070.75	130002.88		76921.37	120379.31	156496.58	17
44	63921.53	83119.92	130034.31		76902.78	120308.10	156441.81	16
45	63943.90	83169.12	130065.76		76884.18	120236.93	156387.08	15
46	63966.26	83218.34	130097.24		76865.58	120165.81	156332.41	14
47	63988.62	83267.59	130128.75		76846.97	120094.75	156277.79	13
48	64010.97	83316.86	130160.28		76828.35	120023.73	156223.22	12
49	64033.32	83366.15	130191.84		76809.73	119952.76	156168.70	11
50	64055.66	83415.47	130223.43		76791.10	119881.84	156114.24	10
51	64077.99	83464.81	130255.04		76772.46	119810.97	156059.82	9
52	64100.32	83514.18	130286.68		76753.82	119740.15	156005.46	8
53	64122.64	83563.57	130318.34		76735.17	119669.38	155951.15	7
54	64144.96	83612.98	130350.03		76716.51	119598.66	155896.89	6
55	64167.27	83662.42	130381.75		76697.85	119527.99	155842.67	5
56	64189.58	83711.88	130413.49		76679.18	119457.36	155788.51	4
57	64211.88	83761.36	130445.26		76660.51	119386.79	155734.41	3
58	64234.18	83810.87	130477.06		76641.83	119316.26	155680.35	2
59	64256.47	83860.40	130508.88		76623.14	119245.79	155626.34	1
60	64278.76	83909.96	130540.73		76604.44	119175.36	155572.38	0

140	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	64278.76	83909.96	130540.73		76604.44	119175.36	155572.38	60
1	64301.04	83959.54	130572.61		76585.74	119104.98	155518.48	59
2	64323.32	84009.15	130604.51		76567.03	119034.65	155464.62	58
3	64345.59	84058.78	130636.44		76548.32	118964.37	155410.81	57
4	64367.85	84108.44	130668.39		76529.60	118894.14	155357.06	56
5	64390.11	84158.12	130700.37		76510.87	118823.95	155303.35	55
6	64412.36	84207.82	130732.38		76492.14	118753.82	155249.70	54
7	64434.61	84257.55	130764.42		76473.40	118683.73	155196.09	53
8	64456.85	84307.30	130796.49		76454.65	118613.69	155142.54	52
9	64479.09	84357.08	130828.58		76435.90	118543.70	155089.04	51
10	64501.32	84406.88	130860.70		76417.14	118473.76	155035.58	50
11	64523.55	84456.70	130892.84		76398.37	118403.87	154982.18	49
12	64545.77	84506.55	130925.01		76379.60	118334.02	154928.82	48
13	64567.98	84556.43	130957.21		76360.82	118264.22	154875.52	47
14	64590.19	84606.33	130989.43		76342.04	118194.47	154822.26	46
15	64612.40	84656.25	131021.68		76323.25	118124.77	154769.06	45
16	64634.60	84706.20	131053.96		76304.45	118055.12	154715.90	44
17	64656.79	84756.17	131086.26		76285.64	117985.51	154662.80	43
18	64678.98	84806.17	131118.59		76266.83	117915.95	154609.74	42
19	64701.16	84856.19	131150.95		76248.01	117846.44	154556.73	41
20	64723.34	84906.24	131183.34		76229.19	117776.98	154503.78	40
21	64745.51	84956.31	131215.75		76210.36	117707.56	154450.87	39
22	64767.67	85006.40	131248.19		76191.52	117638.20	154398.01	38
23	64789.83	85056.52	131280.66		76172.68	117568.88	154345.20	37
24	64811.99	85106.67	131313.16		76153.83	117499.60	154292.44	36
25	64834.14	85156.84	131345.68		76134.97	117430.38	154239.73	35
26	64856.28	85207.04	131378.23		76116.11	117361.20	154187.06	34
27	64878.42	85257.26	131410.81		76097.24	117292.07	154134.45	33
28	64900.55	85307.50	131443.41		76078.37	117222.98	154081.89	32
29	64922.68	85357.77	131476.04		76059.49	117153.95	154029.37	31
30	64944.80	85408.07	131508.70		76040.60	117084.96	153976.90	30
31	64966.92	85458.39	131541.39		76021.70	117016.01	153924.49	29
32	64989.03	85508.73	131574.10		76002.80	116947.12	153872.12	28
33	65011.14	85559.10	131606.84		75983.89	116878.27	153819.80	27
34	65033.24	85609.50	131639.61		75964.98	116809.47	153767.52	26
35	65055.33	85659.92	131672.41		75946.06	116740.71	153715.30	25
36	65077.42	85710.37	131705.23		75927.13	116672.00	153663.12	24
37	65099.50	85760.84	131738.08		75908.20	116603.34	153611.00	23
38	65121.58	85811.33	131770.96		75889.26	116534.72	153558.92	22
39	65143.66	85861.85	131803.86		75870.31	116466.15	153506.89	21
40	65165.72	85912.40	131836.79		75851.36	116397.63	153454.91	20
41	65187.78	85962.97	131869.75		75832.40	116329.16	153402.97	19
42	65209.84	86013.57	131902.74		75813.43	116260.73	153351.09	18
43	65231.89	86064.19	131935.76		75794.46	116192.34	153299.25	17
44	65253.94	86114.84	131968.81		75775.48	116124.00	153247.46	16
45	65275.98	86165.51	132001.88		75756.50	116055.71	153195.72	15
46	65298.01	86216.21	132034.98		75737.51	115987.47	153144.03	14
47	65320.04	86266.93	132068.11		75718.51	115919.27	153092.38	13
48	65342.06	86317.68	132101.26		75699.50	115851.11	153040.78	12
49	65364.08	86368.46	132134.44		75680.49	115783.01	152989.23	11
50	65386.09	86419.26	132167.65		75661.47	115714.95	152937.73	10
51	65408.10	86470.09	132200.89		75642.45	115646.93	152886.27	9
52	65430.10	86520.94	132234.16		75623.42	115578.96	152834.87	8
53	65452.09	86571.81	132267.45		75604.39	115511.04	152783.51	7
54	65474.08	86622.71	132300.77		75585.35	115443.16	152732.19	6
55	65496.06	86673.64	132334.12		75566.30	115375.32	152680.93	5
56	65518.04	86724.60	132367.50		75547.24	115307.54	152629.71	4
57	65540.01	86775.58	132400.91		75528.18	115239.79	152578.54	3
58	65561.98	86826.59	132434.35		75509.11	115172.10	152527.41	2
59	65583.94	86877.62	132467.81		75490.04	115104.45	152476.34	1
60	65605.90	86928.68	132501.30		75470.96	115036.84	152425.31	0

41	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	65605.90	86928.68	132501.30		75470.96	115036.84	152425.31	60
1	65627.85	86979.76	132534.82		75451.87	114969.28	152374.33	59
2	65649.80	87030.87	132568.37		75432.78	114901.76	152323.39	58
3	65671.74	87082.00	132601.94		75413.68	114834.29	152272.50	57
4	65693.67	87133.16	132635.54		75394.57	114766.87	152221.66	56
5	65715.60	87184.35	132669.18		75375.46	114699.49	152170.87	55
6	65737.52	87235.56	132702.84		75356.34	114632.15	152120.12	54
7	65759.44	87286.80	132736.53		75337.21	114564.86	152069.42	53
8	65781.35	87338.06	132770.25		75318.08	114497.62	152018.76	52
9	65803.26	87389.35	132803.99		75298.94	114430.41	151968.15	51
10	65825.16	87440.67	132837.76		75279.80	114363.26	151917.59	50
11	65847.06	87492.01	132871.56		75260.65	114296.15	151867.08	49
12	65868.95	87543.38	132905.39		75241.49	114229.08	151816.61	48
13	65890.83	87594.78	132939.25		75222.33	114162.06	151766.19	47
14	65912.71	87646.20	132973.14		75203.16	114095.08	151715.81	46
15	65934.58	87697.65	133007.06		75183.98	114028.15	151665.48	45
16	65956.45	87749.12	133041.00		75164.80	113961.26	151615.20	44
17	65978.31	87800.62	133074.97		75145.61	113894.41	151564.96	43
18	66000.17	87852.15	133108.97		75126.41	113827.61	151514.77	42
19	66022.02	87903.70	133143.00		75107.21	113760.85	151464.62	41
20	66043.86	87955.28	133177.06		75088.00	113694.14	151414.52	40
21	66065.70	88006.89	133211.15		75068.79	113627.47	151364.47	39
22	66087.53	88058.52	133245.27		75049.57	113560.85	151314.46	38
23	66109.36	88110.18	133279.42		75030.34	113494.27	151264.50	37
24	66131.18	88161.86	133313.59		75011.11	113427.73	151214.59	36
25	66153.00	88213.57	133347.79		74991.87	113361.24	151164.72	35
26	66174.81	88265.31	133382.02		74972.62	113294.79	151114.89	34
27	66196.62	88317.07	133416.28		74953.37	113228.39	151065.11	33
28	66218.42	88368.86	133450.57		74934.11	113162.03	151015.38	32
29	66240.22	88420.68	133484.89		74914.84	113095.71	150965.69	31
30	66262.01	88472.53	133519.24		74895.57	113029.44	150916.05	30
31	66283.79	88524.40	133553.62		74876.29	112963.21	150866.45	29
32	66305.57	88576.30	133588.03		74857.01	112897.02	150816.90	28
33	66327.34	88628.22	133622.46		74837.72	112830.88	150767.39	27
34	66349.11	88680.17	133656.92		74818.42	112764.78	150717.93	26
35	66370.87	88732.15	133691.41		74799.12	112698.72	150668.52	25
36	66392.62	88784.16	133725.94		74779.81	112632.71	150619.15	24
37	66414.37	88836.20	133760.49		74760.49	112566.74	150569.82	23
38	66436.11	88888.26	133795.07		74741.17	112500.81	150520.54	22
39	66457.85	88940.34	133829.68		74721.84	112434.93	150471.31	21
40	66479.59	88992.45	133864.32		74702.51	112369.09	150422.11	20
41	66501.32	89044.59	133898.99		74683.17	112303.29	150372.97	19
42	66523.04	89096.75	133933.69		74663.82	112237.54	150323.87	18
43	66544.75	89148.94	133968.42		74644.46	112171.83	150274.81	17
44	66566.46	89201.16	134003.17		74625.10	112106.16	150225.80	16
45	66588.17	89253.41	134037.95		74605.74	112040.53	150176.83	15
46	66609.87	89305.69	134072.76		74586.37	111974.95	150127.91	14
47	66631.56	89357.99	134107.61		74566.99	111909.41	150079.03	13
48	66653.25	89410.32	134142.48		74547.60	111843.91	150030.20	12
49	66674.93	89462.68	134177.38		74528.21	111778.46	149981.41	11
50	66696.61	89515.06	134212.32		74508.81	111713.05	149932.67	10
51	66718.28	89567.47	134247.28		74489.40	111647.68	149883.97	9
52	66739.94	89619.91	134282.27		74469.99	111582.35	149835.31	8
53	66761.60	89672.38	134317.29		74450.57	111517.06	149786.70	7
54	66783.26	89724.87	134352.34		74431.15	111451.82	149738.13	6
55	66804.91	89777.39	134387.42		74411.72	111386.62	149689.61	5
56	66826.55	89829.94	134422.53		74392.29	111321.46	149641.13	4
57	66848.18	89882.52	134457.67		74372.85	111256.35	149592.70	3
58	66869.81	89935.12	134492.84		74353.40	111191.27	149544.30	2
59	66891.44	89987.75	134528.04		74333.94	111126.24	149495.96	1
60	66913.06	90040.41	134563.27		74314.48	111061.25	149447.65	0

42	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	66913.06	90040.41	134563.27	74314.48	111061.25	149447.65	60
1	66934.67	90093.09	134598.53	74295.01	110996.30	149399.40	59
2	66956.28	90145.80	134633.82	74275.54	110931.40	149351.18	58
3	66977.88	90198.54	134669.14	74256.06	110866.53	149303.01	57
4	66999.48	90251.31	134704.49	74236.57	110801.71	149254.88	56
5	67021.07	90304.11	134739.87	74217.08	110736.93	149206.80	55
6	67042.66	90356.94	134775.28	74197.58	110672.19	149158.75	54
7	67064.24	90409.79	134810.72	74178.08	110607.50	149110.76	53
8	67085.82	90462.67	134846.19	74158.57	110542.84	149062.80	52
9	67107.39	90515.58	134881.69	74139.05	110478.23	149014.89	51
10	67128.95	90568.51	134917.21	74119.53	110413.65	148967.03	50
11	67150.51	90621.47	134952.77	74100.00	110349.12	148919.20	49
12	67172.06	90674.46	134988.36	74080.46	110284.63	148871.42	48
13	67193.61	90727.48	135023.98	74060.92	110220.19	148823.69	47
14	67215.15	90780.53	135059.63	74041.37	110155.78	148775.99	46
15	67236.68	90833.60	135095.31	74021.81	110091.41	148728.34	45
16	67258.21	90886.71	135131.02	74002.25	110027.09	148680.73	44
17	67279.73	90939.84	135166.76	73982.68	109962.81	148633.17	43
18	67301.25	90993.00	135202.54	73963.11	109898.56	148585.65	42
19	67322.76	91046.19	135238.34	73943.53	109834.36	148538.17	41
20	67344.27	91099.41	135274.17	73923.94	109770.20	148490.73	40
21	67365.77	91152.65	135310.03	73904.35	109706.08	148443.34	39
22	67387.27	91205.92	135345.93	73884.75	109642.01	148395.99	38
23	67408.76	91259.22	135381.86	73865.15	109577.97	148348.68	37
24	67430.24	91312.55	135417.81	73845.54	109513.97	148301.42	36
25	67451.72	91365.91	135453.79	73825.92	109450.02	148254.20	35
26	67473.19	91419.29	135489.80	73806.29	109386.10	148207.02	34
27	67494.66	91472.70	135525.85	73786.66	109322.23	148159.88	33
28	67516.12	91526.15	135561.93	73767.02	109258.40	148112.78	32
29	67537.57	91579.62	135598.03	73747.38	109194.60	148065.73	31
30	67559.02	91633.12	135634.17	73727.73	109130.85	148018.72	30
31	67580.46	91686.65	135670.34	73708.08	109067.14	147971.76	29
32	67601.90	91740.20	135706.54	73688.42	109003.47	147924.83	28
33	67623.33	91793.79	135742.77	73668.75	108939.83	147877.95	27
34	67644.76	91847.40	135779.03	73649.07	108876.24	147831.11	26
35	67666.18	91901.04	135815.32	73629.39	108812.69	147784.31	25
36	67687.60	91954.71	135851.64	73609.71	108749.18	147737.55	24
37	67709.01	92008.41	135888.00	73590.02	108685.71	147690.84	23
38	67730.41	92062.14	135924.38	73570.32	108622.28	147644.17	22
39	67751.81	92115.90	135960.80	73550.61	108558.89	147597.54	21
40	67773.20	92169.68	135997.25	73530.90	108495.54	147550.95	20
41	67794.59	92223.50	136033.72	73511.18	108432.23	147504.40	19
42	67815.97	92277.34	136070.23	73491.46	108368.96	147457.90	18
43	67837.34	92331.22	136106.77	73471.73	108305.73	147411.44	17
44	67858.71	92385.12	136143.34	73451.99	108242.54	147365.01	16
45	67880.07	92439.05	136179.95	73432.25	108179.39	147318.64	15
46	67901.43	92493.01	136216.58	73412.50	108116.28	147272.30	14
47	67922.78	92547.00	136253.24	73392.75	108053.21	147226.00	13
48	67944.13	92601.01	136289.94	73372.99	107990.18	147179.75	12
49	67965.47	92655.06	136326.67	73353.22	107926.18	147133.53	11
50	67986.81	92709.14	136363.43	73333.45	107862.23	147087.36	10
51	68008.14	92763.24	136400.22	73313.67	107801.32	147041.23	9
52	68029.46	92817.38	136437.04	73293.88	107738.44	146995.14	8
53	68050.78	92871.54	136473.89	73274.09	107675.61	146949.10	7
54	68072.09	92925.73	136510.78	73254.29	107612.82	146903.09	6
55	68093.39	92979.96	136547.70	73234.48	107550.06	146857.13	5
56	68114.69	93034.21	136584.64	73214.67	107487.34	146811.20	4
57	68135.99	93088.49	136621.62	73194.85	107424.67	146765.32	3
58	68157.28	93142.80	136658.63	73175.03	107362.03	146719.48	2
59	68178.56	93197.14	136695.67	73155.20	107299.43	146673.68	1
60	68199.84	93251.51	136732.75	73135.37	107236.87	146627.92	0

43	Sinus	Tangens	Secans		Sinus	Tangens	Secans	
0	68199.84	93251.51	136732.75		73135.37	107236.87	146627.92	60
1	68221.11	93305.91	136769.85		73155.53	107174.35	146582.20	59
2	68242.37	93360.34	136806.99		73095.68	107111.87	146536.52	58
3	68263.63	93414.79	136844.16		73075.83	107049.43	146490.88	57
4	68284.88	93469.28	136881.36		73055.97	106987.02	146445.29	56
5	68306.13	93523.80	136918.59		73036.10	106924.66	146399.73	55
6	68327.37	93578.34	136955.86		73016.23	106862.33	146354.22	54
7	68348.61	93632.92	136993.15		72996.35	106800.04	146308.75	53
8	68369.84	93687.53	137030.48		72976.46	106737.79	146263.31	52
9	68391.07	93742.16	137067.84		72956.57	106675.58	146217.92	51
10	68412.29	93796.83	137105.23		72936.67	106613.41	146172.57	50
11	68433.50	93851.52	137142.66		72916.77	106551.28	146127.26	49
12	68454.71	93906.25	137180.11		72896.86	106489.18	146081.98	48
13	68475.91	93961.01	137217.60		72876.94	106427.13	146036.75	47
14	68497.11	94015.79	137255.12		72857.02	106365.11	145991.56	46
15	68518.30	94070.61	137292.68		72837.09	106303.13	145946.41	45
16	68539.48	94125.45	137330.26		72817.16	106241.19	145901.30	44
17	68560.66	94180.33	137367.88		72797.22	106179.29	145856.23	43
18	68581.83	94235.23	137405.53		72777.27	106117.42	145811.20	42
19	68603.00	94290.17	137443.21		72757.32	106055.60	145766.21	41
20	68624.16	94345.13	137480.92		72737.36	105993.81	145721.27	40
21	68645.32	94400.13	137518.67		72717.40	105932.06	145676.36	39
22	68666.47	94455.16	137556.45		72697.43	105870.34	145631.49	38
23	68687.61	94510.21	137594.26		72677.45	105808.67	145586.66	37
24	68708.75	94565.30	137632.10		72657.47	105747.03	145541.87	36
25	68729.88	94620.42	137669.98		72637.48	105685.44	145497.12	35
26	68751.01	94675.56	137707.89		72617.48	105623.88	145452.41	34
27	68772.13	94730.74	137745.83		72597.48	105562.35	145407.74	33
28	68793.24	94785.95	137783.80		72577.47	105500.87	145363.11	32
29	68814.35	94841.19	137821.81		72557.46	105439.42	145318.52	31
30	68835.45	94896.46	137859.85		72537.44	105378.01	145273.97	30
31	68856.55	94951.76	137897.92		72517.41	105316.64	145229.46	29
32	68877.64	95007.09	137936.02		72497.38	105255.31	145184.98	28
33	68898.73	95062.45	137974.16		72477.34	105194.01	145140.55	27
34	68919.81	95117.84	138012.33		72457.29	105132.75	145096.16	26
35	68940.89	95173.26	138050.53		72437.24	105071.53	145051.81	25
36	68961.96	95228.71	138088.77		72417.18	105010.34	145007.49	24
37	68983.02	95284.20	138127.04		72397.12	104949.20	144963.22	23
38	69004.07	95339.71	138165.34		72377.05	104888.09	144918.98	22
39	69025.12	95395.26	138203.67		72356.98	104827.02	144874.78	21
40	69046.17	95450.83	138242.04		72336.90	104765.98	144830.63	20
41	69067.21	95506.44	138280.44		72316.81	104704.98	144786.51	19
42	69088.24	95562.08	138318.87		72296.71	104644.02	144742.43	18
43	69109.27	95617.74	138357.34		72276.61	104583.10	144698.39	17
44	69130.29	95673.44	138395.84		72256.51	104522.21	144654.39	16
45	69151.31	95729.17	138434.37		72236.40	104461.36	144610.43	15
46	69172.32	95784.94	138472.94		72216.28	104400.55	144566.51	14
47	69193.32	95840.73	138511.54		72196.15	104339.77	144522.62	13
48	69214.32	95896.55	138550.17		72176.02	104279.04	144478.78	12
49	69235.31	95952.41	138588.83		72155.88	104218.33	144434.97	11
50	69256.30	96008.29	138627.53		72135.74	104157.67	144391.20	10
51	69277.28	96064.21	138666.26		72115.59	104097.04	144347.48	9
52	69298.25	96120.16	138705.03		72095.44	104036.45	144303.79	8
53	69319.22	96176.14	138743.83		72075.28	103975.89	144260.13	7
54	69340.18	96232.15	138782.66		72055.11	103915.37	144216.52	6
55	69361.14	96288.19	138821.53		72034.94	103854.89	144172.95	5
56	69382.09	96344.27	138860.42		72014.76	103794.45	144129.41	4
57	69403.04	96400.37	138899.36		71994.57	103734.04	144085.91	3
58	69423.98	96456.51	138938.32		71974.38	103673.67	144042.46	2
59	69444.91	96512.68	138977.32		71954.18	103613.33	143999.04	1
60	69465.84	96568.88	139016.36		71933.98	103553.03	143955.65	0

44	Sinus	Tangens	Secans	Sinus	Tangens	Secans	
0	69465.84	96568.88	139016.36	71933.98	103553.03	143955.65	60
1	69486.76	96625.11	139055.43	71913.77	103492.77	143912.31	59
2	69507.67	96681.37	139094.53	71893.55	103432.54	143869.00	58
3	69528.58	96737.67	139133.66	71873.33	103372.35	143825.74	57
4	69549.49	96794.00	139172.83	71853.10	103312.20	143782.51	56
5	69570.39	96850.35	139212.03	71832.87	103252.08	143739.32	55
6	69591.28	96906.74	139251.27	71812.63	103191.99	143696.16	54
7	69612.17	96963.16	139290.54	71792.38	103131.95	143653.05	53
8	69633.05	97019.62	139329.85	71772.13	103071.94	143609.97	52
9	69653.92	97076.10	139369.18	71751.87	103011.96	143566.93	51
10	69674.79	97132.62	139408.56	71731.61	102952.03	143523.93	50
11	69695.65	97189.17	139447.96	71711.34	102892.12	143480.97	49
12	69716.51	97245.75	139487.40	71691.06	102832.26	143438.05	48
13	69737.36	97302.36	139526.88	71670.78	102772.43	143395.16	47
14	69758.21	97359.01	139566.39	71650.49	102712.63	143352.31	46
15	69779.05	97415.69	139605.93	71630.19	102652.87	143309.50	45
16	69799.88	97472.40	139645.51	71609.89	102593.15	143266.72	44
17	69820.71	97529.14	139685.12	71589.58	102533.46	143223.99	43
18	69841.53	97585.91	139724.77	71569.27	102473.81	143181.29	42
19	69862.34	97642.72	139764.45	71548.95	102414.19	143138.63	41
20	69883.15	97699.56	139804.16	71528.63	102354.61	143096.00	40
21	69903.96	97756.43	139843.91	71508.30	102295.06	143053.42	39
22	69924.76	97813.33	139883.69	71487.96	102235.55	143010.87	38
23	69945.55	97870.27	139923.51	71467.62	102176.08	142968.36	37
24	69966.33	97927.24	139963.36	71447.27	102116.64	142925.88	36
25	69987.11	97984.24	140003.25	71426.91	102057.23	142883.44	35
26	70007.89	98041.27	140043.17	71406.55	101997.86	142841.04	34
27	70028.66	98098.33	140083.13	71386.18	101938.53	142798.68	33
28	70049.42	98155.43	140123.12	71365.81	101879.23	142756.36	32
29	70070.18	98212.56	140163.15	71345.43	101819.97	142714.07	31
30	70090.93	98269.73	140203.21	71325.05	101760.74	142671.82	30
31	70111.67	98326.92	140243.30	71304.66	101701.55	142629.61	29
32	70132.41	98384.15	140283.43	71284.26	101642.39	142587.43	28
33	70153.14	98441.41	140323.60	71263.85	101583.26	142545.29	27
34	70173.87	98498.71	140363.80	71243.44	101524.17	142503.19	26
35	70194.59	98556.03	140404.03	71223.02	101465.12	142461.12	25
36	70215.30	98613.39	140444.30	71202.60	101406.10	142419.09	24
37	70236.01	98670.79	140484.60	71182.17	101347.12	142377.10	23
38	70256.71	98728.21	140524.94	71161.74	101288.17	142335.14	22
39	70277.41	98785.67	140565.32	71141.30	101229.25	142293.23	21
40	70298.10	98843.19	140605.73	71120.86	101170.37	142251.34	20
41	70318.79	98900.69	140646.17	71100.41	101111.53	142209.50	19
42	70339.47	98958.25	140686.65	71079.95	101052.72	142167.69	18
43	70360.14	99015.84	140727.17	71059.48	100993.94	142125.92	17
44	70380.81	99073.46	140767.72	71039.01	100935.20	142084.18	16
45	70401.47	99131.12	140808.31	71018.54	100876.49	142042.48	15
46	70422.13	99188.81	140848.93	70998.06	100817.82	142000.82	14
47	70442.78	99246.54	140889.58	70977.57	100759.18	141959.19	13
48	70463.42	99304.29	140930.28	70957.07	100700.58	141917.61	12
49	70484.06	99362.08	140971.00	70936.57	100642.01	141876.05	11
50	70504.69	99419.91	141011.77	70916.07	100583.47	141834.54	10
51	70525.32	99477.77	141052.56	70895.56	100524.97	141793.05	9
52	70545.94	99535.66	141093.40	70875.04	100466.51	141751.61	8
53	70566.55	99593.58	141134.27	70854.51	100408.07	141710.20	7
54	70587.16	99651.54	141175.17	70833.98	100349.68	141668.83	6
55	70607.76	99709.53	141216.11	70813.45	100291.31	141627.49	5
56	70628.35	99767.56	141257.09	70792.91	100232.98	141586.19	4
57	70648.94	99825.62	141298.10	70772.36	100174.69	141544.93	3
58	70669.53	99883.71	141339.15	70751.80	100116.42	141503.70	2
59	70690.11	99941.84	141380.24	70731.24	100058.19	141462.51	1
60	70710.68	100000.00	141421.36	70710.68	100000.00	141421.36	0

CAPVT III.

De structura tabularum sinuum, tangentium, & secantium; seu de modo eos calculandi.

Tabulas sinuum, tangentium, secantium calculandi modus.

Brevissimè pertractabo quæ ad structuram præcedentium tabularum, seu ad modum eas calculandi spectant. Quæ in re Geometricis Elementis Euclidis, & Arithmeticâ opus habemus. Qui tamen solo usu tabularum contentus esse volet, omittere poterit totum hoc caput, & ad sequens pergere.

Ad constructionem igitur tabularum sinuum, tangentium, & secantium, ante omnia assumendus est, radius certarum partium. Nobis est partium 10000000, aliis aliarum. Quarumcunque autem partium assumatur, sinus, tangentes, & secantes ferè omnes ad eum sunt irrationales, hoc est, numero partium integrarum, vel etiam fractionum, præcisè verarum inexplicabiles, quoniam plerique sinus reperiuntur per extractionem radicis quadratæ ex numero non perfectè quadrato, cui proinde fractiones adherent, quæ adjunctæ radici, reddunt illam iusto vel majorem, vel minorem, ut ex Arithmetica nostra patet par. 1. cap. 3. art. 5. Itaque tabulæ sinuum, tangentium, & secantium exactæ nullo modo dari possunt. Tales tamen esse possunt ac debent, ut in iis nullus numerus absit à vero per unam integram earum partium, quarum radius est assumptus. Nostrarum certè tabularum numerus nullus abest à vero vel unicâ particulâ 10000000 partium, quoniam in constructione illarum assumptus fuit radius longè major quàm 10000000 partium, quod facere necessarium erat, ut ab inventis sinibus numeri illi à dextera, in quibus error esse poterat, abjicerentur.

In inveniendis porrò singulorum graduum & minorum sinibus (ex quibus deinde facile eruuntur tangentes & secantes) varii variè procedunt. Nos inquirimus primò sinus quosdam primarios, & ex his deinde secundarios omnes. Primarios vocamus, ex quibus reliqui deducuntur. Tota praxis continetur in sequentibus Propositionibus.

Propositio I. Problema.

Sinus primarios supputare.

Sinus primarios statuimus quatuor, præter sinum totum, nimirum sinus graduum 30, 18, 36, & 45.

Primò itaque, latus hexagoni circulo inscripti æquale est semidiametro eiusdem circuli, per 15. quartæ Euclid. Cùm igitur semidiameter, sive sinus totus DC, vel DA, aut DB, ponatur à nobis partium 10000000, erit totidem partium chorda AG 60 graduum, quæ est latus hexagoni; ac proinde eius dimidium AL, vel GL, quod est sinus arcus AH graduum 30, per 3. Definit. huius, erit partium 5000000.

Secundò. Cùm recta BIC sit chorda quadrantis BKC, erit eius dimidium BI, per Coroll. post. IV. Definit. huius, sinus arcus BK 45 graduum. Facile autem sciri potest per 47. pri. Euclid. quot partium sit linea BIC, cùm triangulum BDC sit rectangulum ad D, & latera BD, DC cognita, nimirum singula partium 10000000; erit

Sinus primarii qui, & quomodo supputandi. Fig. 242. Icon. C.

enim summa quadratorum utriusque partium 20000000000000; cuius numeri radix quadrata 14142136 est linea BIC; dimidium verò ejusdem est linea BI partium 7071068, qui est sinus arcus BK, vel CK graduum 45.

Tertiò. Dividatur AD in E bifariam, & ducatur recta CE; cumque CD, DE, trianguli rectanguli CDE notæ sint, hæc partium 5000000, illa 10000000; erit, per 47. pri. Euclid. recta CE partium ferè 11180340. Hæc transferatur ex E in F, & auferatur ex illa ED partium 5000000; restabit DF partium 6180340, quæ est latus decagoni, hoc est, chorda arcus 36 graduum (per ea quæ demonstrat Ptolemæus lib. 1. Magnæ Syntaxeos, patetq. tum ex 11. Secundi, & 5. Decimi tertii, tum ex 9. Decimi ter. Euclidis.) ac proinde eius dimidium 3090170, est sinus 18 graduum.

Quartò. Cùm triangulum CDF sit rectangulum; erit, per 47. pri. Euclid. quadratum ipsius CF æquale quadratis ipsarum CD, DF; ergo ipsa CF erit 11755705, quæ est latus pentagoni, seu chorda arcus 72 graduum, per 10. Decimi tertii Euclid. cujus dimidium est sinus 36 graduum nimirum 5877852.

Propositio II. Problema.

Sinus secundarios supputare.

Habitis sinibus primariis, facile supputantur secundarii. Ac primò quidem sinus complementorum quatuor primariorum jam inventorum.

Sinus secundarios supputare.

Primò. Sit arcus CD 30 graduum; erit ergo eius sinus rectus ED, vel AF ipsi æqualis, per 34. pri. Euclidis. partium 5000000. Complementum arcus CD est arcus DB, cujus sinus est linea DF, vel EA ipsi æqualis, per 34. pri. Euclid. quam sic inquirimus. In triangulo rectangulo ADF, latera AF, AD, nota sunt, illud 5000000, hoc 10000000, utpote semidiameter. Itaque cùm, per 47. pri. quadrato rectæ AD æqualia sint quadrata rectarum AF, FD; si quadratum ipsius AF ex quadrato AD tollatur, remanebit quadratū ipsius FD partiū 75000000000000; cuius radix quadrata 8660254, est sinus arcus BD graduum 60, complementi nimirum arcus CD 30 graduum.

Fig. 243. Icon. C.

Eodem modo reperiemus sinus complementorum 36 & 18 graduum, hoc est, sinus graduum 54, & 72. Sinus complementi graduum 45, est æqualis ipsi sinui recto graduum 45.

Secundò. Sinus arcuum dimidiorum sic reperiuntur. Sit BC quadrans, BD arcus 45 graduum, cuius sinus DF antea repertus partiū 7071068; cupis habere sinum arcus BE graduum 22. minut. 30; qui est semissis arcus BD graduum 45. Sic procede. Arcus CD est æqualis arcui BD; igitur & sinus HD, hoc est, AF est æqualis sinui DF; subtracto ergo sinu AF 7071068, ex AB sinu toto, restat BF sinus versus arcus BD, nimirum 2928932; cuius quadratum cum quadrato ipsius DF facit 58478645321248; cuius radix quadrata 7653668, est chorda BGD arcus BD; semissis eius BG, nimirum 3826834, est sinus arcus BE graduum 22. 30.

Fig. 244. Icon. C.

Eodem modo reperies sinus graduum 15, & 9, cùm sint dimidii graduum 30 & 18.

Antequam ulterius progrediamur, demonstrandum

est sequens Lemma ex Elementis Euclidis; necessarium enim nobis erit ad reliquos sinus investigandos.

Propositio III. Lemma.

Si in circulo quadrilaterum describatur; erit diametrorum rectangulum aequale rectangulis ab oppositis lateribus descriptis.

Fig. 245.
Icon. C.

SIt in circulo $ADCB$, quadrilaterum $ABCD$, cum duabus diametris AC , BD descriptum. Dico, rectangulum diametris AC , BD contentum, æquale esse rectangulis duobus, quorum unum lateribus oppositis AB , DC , alterum lateribus oppositis AD , BC continetur. Fiat enim angulus ADE , angulo BDC æqualis, per 23. pri. Euclid. Quo facto, erunt triangula DAB , CDE æquiangula. Nam Anguli A BD , ACD , sunt æquales, per 21. tertii; anguli verò ADB , CDE , æquales sunt, per structuram, & per Axio. pri. (cùm enim Angulus AD E angulo BDC æqualis sit factus; si utrique addatur communis BDE , erunt toti ADB , CDE æquales) sunt autem & reliqui duo æquales, per 32. pri. Igitur triangula ADB , CDE æquiangula sunt; ac proinde erit ut AB ad CE , ita BD ad DC , per 4. sexti. Cùm autem quatuor rectæ lineæ proportionales sunt, est rectangulum mediarum æquale rectangulo extremarum, per 16. sexti. Igitur rectangulum ipsarum DB , CE , æquale est rectangulo AB , CD . Rursus triangula BCD , DEA , sunt æquiangula. Nam anguli BDC , ADE æquales sunt per constructionem; anguli verò CBD , DAE , per 21. tertii; & reliqui per 32. pri. Est igitur ut CB ad AE , ita BD ad AD per 4. sexti. Rectangulum igitur mediarum BD , AE , æquale est rectangulo extremarum BC , AD . Cùm itaque rectangulum DB , CE , æquale sit rectangulo AB , DC ; & rectangulum BD , EA , æquale rectangulo BC , DA ; sintque rectangula ipsarum BD , CE , & ipsarum BD , EA , æqualia rectangulo ipsarum BD , AC , per 1. Secundi; erit & rectangulum ipsarum BD , AC , æquale duobus rectangulis laterum oppositorum quadrilateri, nimirum rectangulo AB , DC , & rectangulo BC , AD ; quod demonstrandum erat.

His demonstratis pergo, & investigo reliquos omnes sinus omnium graduum ac minorum totius quadrantis, per sequentia Problemata.

Propositio IV. Problema.

Sinum arcus æqualis duobus arcibus quadrante minoribus, quorum sinus noti sunt, invenire.

Fig. 246.
Icon. C.

Totus circulus $ABCD$ intelligatur divisus tantum in 180. partes æquales, ut omnes subtensæ sint instar sinuum: sic enim fiet, ut quod demonstratur de chordis, intelligi possit demonstratum de sinibus, qui sunt dimidium chordarum. Sit igitur arcus BCD , æqualis duobus arcibus BC , CD , quorum BC sit 30, CD 18 graduum, ut totus arcus BCD sit 48. graduum, cuius sinus BD sit inveniendus. Sic procede. Sinus arcuum BC , CD , qui sunt lineæ BC , CD , sunt noti, per 1. huius capituli; erunt igitur & complementorum sinus BA , DA noti, per 2. huius cap. ille nimirum 60 grad. hic 72. grad. Sinus BC est partium 5000000, BA 8660254, CD 3090170, DA 9510565, ut ostendimus in præcedentibus. Cùm igitur si-

gura $ABCD$ sit quadrilatera circulo inscripta, & diametris divisa; & rectangula contenta sub $BCDA$; & sub $DCBA$, æquentur rectangulo sub diametris CA , BD contento, per 3. huius; si ducas CB 5000000 in DA 9510565, & CD 3090170, in BA 8660254; atque producta 4755285000000, & 26761657103180 conjunxeris; prodibit rectangulum diametris AC , BD contentum, scilicet 74314482103180; his autem per CA , hoc est, per 100000000 divisis, provenient 7431448, sinus BD arcus BCD 48 graduum.

Atq; hoc modo inveniuntur omnium arcuum duobus arcibus conjunctis quadrante minoribus æqualem, si sinus dictorum duorum arcuum noti fuerint.

Propositio V. Problema.

Sinum differentia duorum arcuum quadrante minorum; quorum sinus noti sunt, invenire.

SIt arcus majoris BCD 45 graduum, sinus BD recta BD ; sinus verò arcus minoris BC 18 graduum, sit recta BC ; sinus denique differentia DC 27 graduum, sit recta DC , quem inquire oporteat. Sic procede. $ABCD$ est quadrilaterum habens proprietates tertiæ huius capituli; & sinus arcus BCD , nempe recta BD , est per 1. huius cap. partium 7071068; totidemq; etiam est DA priori æqualis, utpote graduum 45; sinus totus AB est 10000000; sinus arcus CB est 3090170; AC 9510565, sinus CB ductus in DA , facit 21850802201560; sinus verò AC ductus in BD , facit 67249851833420. Subtractis jam 21850802201560, ex 67249851833420; restant 45399049631860; quibus per AB , hoc est, per sinum totum divisis, restat CD partium 4539905, qui est sinus 27. graduum. Eodem modo proceditur in aliis.

Fig. 247.
Icon. C.

Propositio VI. Problema.

Omnium graduum & minorum quadrantis sinus supputare, & tabulam sinuum conficere.

EX quatuor præcedentibus Problematibus tota tabula sinuum per omnes gradus & minuta quadrantis supputari facillime potest. Habitis enim sinibus primariis graduum 18, 30, 36, 45, habentur dimidii graduum 9, 15, 18; & horum complementa 81, 75, 72. Differentia inter 15 & 18, sunt 3; ergo & sinus 3 graduum haberi potest. Summa 45 & 3, est 48; semissis 48 est 24, semissis huius est 12, huius 6, huius 3; dimidium huius est gradus 1, minuta 30; dimidium huius sunt minuta 45. Igitur habito sinu minorum 45, qui est 130896, si dicas: 45 minuta dant 130896, quid dat 1. minutum? reperies sinum hunc 2909. Quo habito alios sinus per minuta facile supputabis per auream Arithmeticæ regulam.

Propositio VII. Problema.

Tabulas tangentium & secantium supputare.

Tabulas Tangentium facile supputabis. Sit enim quadrans ABC , arcus datus CD , complementum DB , tangens arcus dati sit CG . Hanc invenies, si dicas: ut sinus complementi FD , hoc est, AE ipsa æqualis, ad sinum arcus dati ED , ita sinus totus AC ad tangentem CG . Nam triangula ADE , AGC , sunt æquiangula, per 2. Sexti, ideoque per 4. Sexti, ut AE ad ED , ita AC ad CG . Eadem

Tabulas tangentium & secantium supputare. Fig. 248. Icon. C.

Eadem facilitate supputabis Secantes. Sit enim AG secans arcus CD dati. Invenies eam, si dicas: ut AE sinus complementi arcus dat ad AD sinum totum, ita AC sinus totus ad secantem AG. Demonstratio est eadem ut antea.

Aliter invenies eandem secantem, si dicas: ut ED sinus arcus dati, ad DA sinum totum; ita tangens CG ejusdem arcus dati, ad secantem GA. Demonstratio est eadem.

Confectorium.

EX dictis hoc capite constat, tabulas sinuum, tangentium, & secantium non esse undequaque accuratas, ut supra insinuavi, tum ob causam ibi dictam, tum quia in calculo arcus adhibentur ut lineæ.

CAPUT IV.

De usu Canonis triangulorum, seu Tabularum Sinuum, Tangentium, & Secantium.

Tabularum sinuum, tangentium, & secantium usus in quo consistat.

USUS prædictarum tabularum consistit in duobus præcipue. Primo, ut ex ipsis vel cujuslibet arcus aut anguli dati inquiratur sinus, tangens, & secans; vel è contrario cujusvis sinûs, tangentis, secantis arcus aut angulus. Secundo, ut ope sinuum, tangentium, & secantium tanquam assumptorum laterum triangulorum, ex notis lateribus, aut angulis, dati cujuslibet trianguli, investigentur cætera ignota, modo insinuato in principio hujus libri, & capitibus sequentibus fusè explicando. Primum voco usum Canonis triangulorum, alterum Dimensionem triangulorum. De primo hoc capite, de altero agemus sequentibus.

Usus canonis triangulorum.

Propositio I. Problema.

Dato arcu quadrante minore, utrumque ejus sinum, tangentem, & secantem reperire.

SI datus arcus quadrante minor non excedit dimidium quadrantis, seu 45 gradus, quære numerum graduum in superiore parte tabularum, nempe in fronte primæ columnæ; & è regione in tribus proximè sequentibus columnis invenies sub proprijs titulis sinum, tangentem, & secantem; in reliquis verò tribus columnis invenies sinum, tangentem; & secantem complementi dati arcus. Quòd si datus arcus adjuncta habet minuta, descende à gradu in fronte primæ columnæ invento per seriem minorum usque ad minutum datum, & ab invento minuto procede versus dexteram; reperiesque ut antea sub proprijs titulis sinum, tangentem, & secantem tam dati arcus, quam complementi ipsius.

Si verò datus arcus quadrante minor excedit dimidium quadrantis, quære numerum graduum in inferiore parte tabularum, nempe in calce octavæ columnæ; & si adjuncta habet minuta, in serie minorum ascende usque ad minutum datum; reperiesque è regione sub proprijs titulis in primis tribus columnis sinum, tangentem, & secantem dati arcus, in reliquis verò tribus habebis sinum, tangentem, & secantem complementi.

EXEMPLA. Sit primò datus arcus Gr. 27. M. 23. Quære 27 in fronte primæ columnæ, & descende per seriem minorum usque ad 23 inclusivè; reperiesq; è regione sub proprijs titulis sinum, tangentem, & secantem quæ situm, tam dati arcus, quam complementi ipsius. Sit secundo arcus datus Gr. 56. M. 33. Quærantur gradus in calce octavæ columnæ, & ascendatur in serie minorum usque ad 33 inclusivè; occurretq; è regione sub proprijs titulis sinus, tangens, & secans dati arcus, & ejus complementi.

Propositio II. Problema.

Dati arcus quadrante majoris utrumque sinum, tangentem, & secantem invenire.

SI datus arcus sit major quadrante, sed minor semicirculo, id est, minor quàm 180 graduum; detrahe arcum datum ex semicirculo, & cum residuo arcu operare ut prius: hujus enim arcus sinus, tangens, & secans, est etiam sinus, tangens, & secans arcus quadrante majoris, propterea quòd duo arcus semicirculum complentes habeat eundem sinum, tangentem, & secantem, ut diximus cap. 1. Definit. 3.

EXEMPLUM. Sit datus arcus G. 123. M. 27. Subtrahatur ex semicirculo, hoc est, ex G. 179. M. 60; remanetque arcus minor quadrante G. 56. M. 33; cujus sinus, tangens, & secantes, sunt etiam sinus, tangens, & secantes arcus G. 123. M. 27. Illi autem habentur per Problema præcedens; ergo & isti.

G. 179. M. 60
G. 123. M. 27
G. 56. M. 33

Propositio III. Problema.

Dati arcus sinum versus eruere.

ARCUS datus, cujus sinum versus ex tabulis eruere desideras, vel est minor quadrante, vel major. In utroque casu ita procedatur. Per præcedentia Problemata inveniatu dicti arcus sinus complementi; & in primo casu subtrahatur ex sinu toto, & residuum erit sinus versus arcus dati: in secundo verò casu addatur sinui toti, & summa resultans erit sinus versus arcus dati. Ratio patet ex capite 1. Definit. 5. & 6.

EXEMPLUM.

Arcus datus minor quadrante. G. 27. M. 23.
Arcus datus major quadrante. G. 152. M. 37.
Complementum commune G. 62. M. 37.

Sinus totus seu radius	10000000.	10000000
Sinus complem. subtrahen.	8879492.	addendus 8879492.
Sinus versus quæ situs	1120508.	18879492.
Arcus Grad.	27. M. 23.	Arcus G. 152. M. 37.

Propositio IV. Problema.

Invenire sinum versus complementi dati arcus.

LOCO arcus dati sumatur arcus complementi, & hujus arcus complementi quaratur sinus versus per Problema præcedens; hujus enim arcus sinus versus, est sinus versus complementi arcus propositi. EXEMPLUM. Sit datus arcus G. 60; erit arcus complementi G. 30. Hujus quaratur sinus versus per præcedens Problema, & habebitur sinus versus complementi arcus G. 60.

Propositio V. Problema.

Dati arcus chordam invenire.

Antiqui, antequam invenirentur tabulæ sinuum, utebantur chordis in trigonometria, quæ nihil aliud sunt quàm dupli sinus arcuum subduplicum, ut patet ex cap. I. Definit. I. Dato ergo arcu, si chorda inquirenda est, ea sic invenitur. *Arcus datus dividatur bifariam, & medietatis queratur sinus rectus per Problema I; sinus inventus duplicetur, & numerus productus erit chorda arcus dati.* **EXEMPLUM.** Sit arcus datus G. 60. Dividatur bifariam, & medietatis, nempe 30, queratur sinus rectus, qui est 5000000; hic duplicetur, & habebitur 10000000 pro chorda arcus G. 60; quæ quidem chorda in hoc casu æqualis est semidiametro circuli, seu sinui toti, quia est latus hexagoni circuli inscripti.

Propositio VI. Problema.

Sinui, tangenti, Secanti datis, debitum arcum invenire.

Sinus, tangens, secans queratur in tabula; vel si non inveniantur, sumatur proximè major, vel proximè minor; & à numero invento procedatur versus sinistram, aut dextram, usque ad primam aut octavam columnam; illic enim occurrent minuta arcus quæsiti, & in capite vel calce ejusdem arcus gradus. Et hoc modo procedendum est, quando constat arcum quæsitum esse quadrante minorem: quando autem est major quadrante, tunc arcus inventus debet subtrahi ex semicirculo seu gradibus 180, & residuum erit arcus quadrante major quæsitus. Pulchrè autem operatio in triangulis tam rectilineis, quàm sphericis, docet accipiendus sit arcus quadrante major proposito sinui, tangenti, secanti respondens, an verò minor, ut suis locis apparebit. **EXEMPLUM.** Sic dato sinui 45399.05, invenies respondere G. 27. M. 0: Tangenti 120593.27, G. 50. M. 20. & sic in reliquis. At pro sinu 5348915, quem non reperies in tabula, capies propinquiorem sinum 53484.40, cui respondent G. 32. M. 20 &c.

Propositio VII. Problema.

Eundem arcum invenire, quando numerus datus est sinus, tangens, secans complementi arcus quæsiti.

Eodem modo procede, ut in præcedente Problemate, & arcus inventi accipe complementum; hoc enim erit arcus quæsitus; nisi forte constet arcum quæsitum esse majorem quadrante: tunc enim arcus per præcedens Problema inventus, & quadrante auctus, est ille qui queritur. **EXEMPLUM.** Detur sinus complementi alicujus arcus hic numerus, 48455.52. Hujus tanquam sinis quære proprium arcum, per præcedens Problema, G. 28. M. 59. cujus complementum G. 61. M. 1. est arcus quæsitus. At si ejusdem sinis 48455.52, sit capiendus arcus quadrante major; inventus per præcedens Problema proprius arcus G. 28. M. 59. auctus quadrante, nimirum G. 118. M. 59. dat arcum quæsitum.

Propositio VIII. Problema.

Idem præstare, quando numerus datus est sinus versus.

Si datus sinus versus minor est quàm sinus totus, detrahe ipsum ex sinu toto; si verò major quàm sinus totus, detrahe hunc ex illo; & residui quære arcum per præcedens Problema, eumque deme à quadrante in primo casu, adde verò quadranti in secundo casu, & habebis arcum dati sinus versi. **EXEMPLUM.** Sit datus sinus versus 15369, radio, 0000000 minor: deme illum ex hoc, & relinquetur sinus 99847.31, G. 86. M. 50: hic arcus demptus ex G. 90. dat G. 3. M. 10. pro sinu verso 15369 dato. Sit iterum sinus versus 199847.31 major radio: deme ex eo radium 10000000, & remanebit sinus 99847.31, G. 86. M. 50: hunc arcum adde gradibus 90, ut fiat arcus G. 176. M. 50, cujus 199847.31, est sinus versus.

Propositio IX. Problema.

Idem præstare, quando numerus datus est sinus versus complementi.

Numerum datum subtrahere ex sinu toto, vel hunc ex numero dato, & ejus quære arcum, & habebis intentum, sive numerus datus sit minor sinu toto, sive major.

Propositio X. Problema.

Datâ chordâ, ejus arcum invenire.

Chordam datam seca bifariam, & semissem quære sub titulo sinuum, & arcum sinui invento respondentem duplica; eritque resultans arcus quæsitus. Ratio patet ex dictis cap. I. Definit. I.

Propositio XI. Problema.

Partem proportionalem pro minutis secundis reperire.

Problemata præmissa supponunt arcus datos esse in gradibus & minutis primis tantum; item numeros datos contineri in tabulis. Quia verò sæpe gradibus & minutis primis adherent secunda, & sæpe numeri dati non continentur in tabulis; sequentia docebunt quid in prædictis casibus sit faciendum.

§. I.

Quid observandum, quando minuta secunda negliguntur.

Minuta secunda gradibus & minutis primis adjuncta plerumque à Mathematicis negliguntur in calculo triangulorum, præsertim quando problema propositum est solitarium, & unicâ regulâ trium absolvitur, & ex solutione ipsius non pendet solutio aliorum problematum: quod plerumque in Problematis ad Geometriam practicam spectantibus contingit. In hoc igitur casu observa hanc regulam. *Quando minuta secunda sunt pauciora quàm 30, accipe in tabula arcum graduum & minutorum datorum: quando verò sunt plura quàm 30, accipe arcum sequentem.* **EXEMPLUM.** Si datus arcus est G. 15 M. 7. Sec. 18; accipitur in tabula arcus G. 15. M. 7. neglectis 18 secundis, quia sunt circa se-

tra semissem unius minuti primi, & neglecta exiguum errorem inducere possunt. Sivero est G. 15. M. 7. Sec. 43; tunc 43 secunda reputantur pro uno primo, & ideo pro arcu dato accipitur in tabula arcus G. 15. M. 8. Et hæc praxis communiter observatur, quia communiter non requiritur major scrupulositas.

Similiseſt ratio de finibus, tangentibus, & secantibus, quando in tabulis non reperiuntur præcisè. Si enim sinus datus esset 4518321, & pro ipso quæreretur arcus; ejus loco acciperetur sinus 45191.58, quia hic est ipsi vicinior quam sinus 45165.63; & arcus quæſitus diceretur esse G. 26. M. 52.

§. II.

Quid observandum, quando minuta secunda non negliguntur

Quod si minuta secunda non vis penitus negligere, inquire partem proportionalem ipsis respondentem, hoc modo.

Item, quando non negligantur.

Quando pro arcu dato quæritur sinus, tangens, secans, accipe differentiam inter sinum arcus proximè majoris, & sinum arcus proximè minoris arcu dato (subtrahendo nimirum minorem ex majori; cui quidem differentia debetur unum minutum primum, sive 60 secunda. quia singuli arcus proximè in tabula differunt inter se uno minuto primo, seu 60 secundis.) Utere deinde regulà aureà Arithmeticæ, dicendo: si 60 secunda dant totam eam differentiam, quantam differentiam, dabunt proposita secunda? & quotus resultans, sive differentia inventa in quoto, erit pars proportionalis. Hanc adde sinui arcus proximè minoris, & efficietur sinus relictus arcus propositi. Idem faciendum de tangentibus, & secantibus. EXEMPLUM. Sit arcus propositus G. 64. M. 5. sec. 37. ad quem in tabula quoad minuta proximè accedunt arcus G. 64. M. 6. & arcus G. 64. M. 5. His arcibus in tabula

o	,	
} major 64. 6.	o	} 89955. 78.
Arcus	,	Sinus
} minor 64. 5.	,	} 89943. 27.
Differentia G. o. I. ut 60 II.		1251.
Partes respondentes		771.

adscripti sunt hi sinus: 89955. 78. & 89943. 27. Accipe igitur differentiam inter hos duos sinus, subtrahendo minorem à majori & invenies 1251

partes; quæ minuto I, seu 60 secundis respondent, Vide jam per Regulam auream, quot partes respondeant 37 min. secundis; & invenies 771, cum 27 sexagesimis. Adde igitur 771 (nam fractio $\frac{27}{60}$ negligitur, cum minus valeat quam $\frac{1}{2}$) ad sinum 89943. 27; eritque numerus productus, 89950. 98, sinus arcus G. 64. M. 5. Sec. 37. Eodem modo procede in tangentibus & secantibus.

Quando pro numero dato quæritur arcus, accipe differentiam inter sinum proximè minorem, & sinum proximè majorem; item differentiam inter sinum propositum, & illum in tabula repertum à quo minus differt, & dic: si differentia inter duos sinus in tabula repertos dat sec. 60, addenda arcui sinus proximè minoris, vel auferenda ab arcu sinus proximè majoris (prout videlicet sumpta fuerit differentia inter sinum propositum, & sinum proximè minorem, vel proximè majorem) ut habeatur arcus sinus proximè majoris, vel proximè minoris; quot secunda postulat differentia inter sinum propositum & sinum proximè minorem, vel proximè majorem, addenda arcui sinus proximè minoris, vel auferenda ab arcu sinus proximè majoris, ut habeatur arcus propositi sinus? Nam hæc secunda per Regulam auream inventa, addita arcui sinus proximè minoris, vel ablata ab arcu sinus proximè majoris, dabunt arcum sinus propositi. EXEMPLUM. Sit propositus sinus 89950. 98, qui in tabula non invenitur præcisè, sed proximè major est 89955. 78. & proximè minor 89943. 27. differentes inter se partibus 1251; & arcus dictis sinibus respondentes differunt sec. 60; differentia verò inter minorem sinum in tabula inventum, & inter sinum datum est 771. Dic ergo: si differentia 1251 minori arcui G. 64. M. 5. addit 60 sec: quot addet eidem differentiæ 771? Reperies secunda $36\frac{11}{271}$, hoc est, secun. 37 ferè adijcienda minori arcui G. 64 M. 5. ita ut arcus respondens sinui dato 8995098, sit G. 64. M. 5. sec. 37 ferè. Eodem modo procedes in alijs.

Annotatio de Angulis.

Quæcumque dicta sunt huc usque de arcibus respectu sinuum, tangentium, & secantium, & de finibus, tangentibus, & secantibus respectu arcuum, referenda sunt etiam ad angulos: nam, per ult. Sexti Euclid, eadem est ratio arcuum & angulorum ac ipsi arcibus subtensorum, & una eademque est utrorumque mensura, quia tam arcus, quam anguli mensurantur gradibus & minutis, ut supra etiam cap. I. monuimus.