TABLAS

Logarítmicas y trigonométricas

DE 4 Y 5 DECIMALES.

POR EL

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PROFESOR DE ASTRONOMÍA Y GEODESIA

EN LA ESCUELA POLITÉCNICA

DE QUITO

Imprenta nacional.

1874.

INTRODUCCION.

El fin que he tenido componiendo estas tablas de Logaritmos era ayudar en algo á fin de que el estudio de las matemáticas sea práctico y útil. Nadie ignora que la práctica exige absolutamente tales tablas.

Pero muy pocos han de hacer uso de las tablas en la práctica aunque las consigan con facilidad sino se les han hecho familiares en tiempo del estudio. Esta utilidad solo ha podido moverme á emprender un trabajo tan pesado por razon de las correcciones.

Aqui se encuentran solo las tablas mas necesarias, es decir, los logaritmos

de los números, las funciones trigonométricas y los logaritmos de las funciones trigonométricas todas estas de á 5 decimales.

Esta construccion basta completamente para la enseñanza en los Colegios y raro es el caso que no bastaria en la práctica.

Quito, noviembre 18 *de* 1874.

EL AUTOR.

TABLA I.

Logaritmos de Briggs

para los números

1—10000.

Logaritmos

de 5 decimales para los números naturales.

N.	L.	N.	L.	N.	L.	N.	L.
1	0,00 000	26	1,41 497	51	1,70 757	76	1,88 081
2	0,30 103	27	1,43 136	52	1,71 600	77	1,88 649
3	0,47,712	28	1,44 716	53	1,72 428	78	1,89 209
4	0,60 206	29	1,46 240	54	1,73 239	79	1,89 763
5	0,69 897	30	1,47 712	55	1,74 036	80	1,90 309
6	0,77 815	31	1,49 136	56	1,74 819	81	1,90 849
7	0,84 510	32	1,50 515	57	1,75 587	82	1,91 381
8	0,90 309	33	1,51 851	58	1,76 343	83	1,91 908
9	0,95 424	34	1,53 148	59	1,77 085	84	1,92 428
10	1,00 000	35	1,54 407	60	1,77 815	85	1,92 942
11	1,04 139	36	1,55 630	61	1,78 533	86	1,93 450
12	1,07 918	37	1,56 820	62	1,79 239	87	1,93 952
13	1,11 394	38	1,57 978	63	1,79 934	88	1,94 448
14	1,14 613	39	1,59 106	64	1,80 618	89	1,94 939
15	1,17 609	40	1,60 206	65	1,81 291	90	1,95 424
16	1,20 412	41	1,61 278	66	1,81 954	91	1,95 904
17	1,23 045	42	1,62 325	67	1,82 607	92	1,96 379
18	1,25 527	43	1,63 347	68	1,83 251	93	1,96 848
19	1,27 875	44	1,64 345	69	1,83 885	94	1,97 313
20	1,30 103	45	1,65 321	70	1,84 510	95	1,97 772
21	1,32 222	46	1,66 276	71	1,85 126	96	1,98 227
22	1,34 242	47	1,67 210	72	1,85 733	97	1,98 677
33	1,36 173	48	1,68 124	73	1,86 332	98	1,99 123
24	1,38 021	49	1,69 020	74	1,86 923	99	1,99 564
25	1,39 794	50	1,69 897	75	1,87 506	100	2,00 000

N.	L.	0	1	2	3	4	5	6	7	8	9	D.
100	00	000	043	087	130	173	217	260	303	346	389	44
101		432	475	518	561	604	647	689	732	775	817	43
102		860	903	945	988	030	*072	*115	*157	*199	*242	42
103	01	284	326	368	410	452	494	536	578	620	662	
104		703	745	787	828	870	912	953	995	*036	*078	
105	02	119	160	202	243	284	325	366	407	449	490	41
106		531	572	612	653	694	735	776	816	857	898	
107		938	979	019	060	100	*141	*181	*222	*262	*302	
108	03	342	383	423	463	503	543	583	623	663	703	40
109		743	782	822	862	902	941	981	*021	*060	100	
110	04	139	179	218	258	297	336	376	415	454	493	39
111		532	571	610	650	689	727	766	805	844	883	
112		922	961	999	038	077	*115	*154	*192	*231	*269	
113	05	308	346	385	423	461	500	538	576	614	652	38
114		690	728	767	805	843	881	918	956	994	*032	
115	06	070	108	145	183	221	258	296	333	371	408	
116		446	483	521	558	595	633	670	707	744	781	37
117		819	856	893	930	967	*004	*041	*078	*115	*151	
118	07	188	225	262	298	335	372	408	445	482	518	
119		555	591	628	664	700	737	773	809	846	882	36
120		918	954	990	027	063	*099	*135	*171	*207	*243	
121	08	279	314	350	386	422	458	493	529	565	600	
122		636	672	707	743	778	814	849	884	920	955	
123		991	026	061	096	132	*167	*202	*237	*272	*307	35
124	09	342	377	412	447	482	517	552	587	621	656	
125		691	726	760	795	830	864	899	934	968	003	
126	10	037	072	106	140	175	209	243	278	312	346	34
127		380	415	449	483	517	551	585	619	653	687	
128		721	755	789	823	857	890	924	958	992	025	
129	11	059	093	126	160	193	227	261	294	327	361	33
130		394	428	461	494	528	561	594	628	661	694	
131		727	760	793	826	860	893	926	959	992	024	
132	12	057	090	123	156	189	222	254	287	320	352	
133		385	418	450	483	516	548	581	613	646	678	
134		710	743	775	808	840	872	905	937	969	001	32
		0	1	2	3	4	5	6	7	8	9	

N.	L.	0	1	2	3	4	5	6	7	8	9	D
135	13	033	066	098	130	162	194	226	258	290	322	32
136		354	386	418	450	481	513	545	577	609	640	
137		672	704	735	767	799	830	862	893	925	956	
138		988	019	051	082	114	145	176	208	239	270	31
139	14	301	333	364	395	426	457	489	520	551	582	
140		613	644	675	706	737	768	799	829	860	891	
141		922	953	983	014	045	076	106	137	168	198	
142	15	229	259	290	320	351	381	412	442	473	503	
143		534	564	594	625	655	685	715	746	776	806	30
144		836	866	897	927	957	987	017	047	077	107	
145	16	137	167	197	227	256	286	316	346	376	406	
146		435	465	495	524	554	584	613	643	673	702	
147		732	761	791	820	850	879	909	938	967	997	29
148	17	026	056	085	114	143	173	202	231	260	289	
149		319	348	377	406	435	464	493	522	551	580	
150		609	638	667	696	725	754	782	811	840	869	
151		898	926	955	984	013	041	070	099	127	156	
152	18	184	213	241	270	298	327	355	384	412	441	28
153		469	498	526	554	583	611	639	667	696	724	
154		752	780	808	837	865	893	921	949	977	005	
155	19	033	061	089	117	145	173	201	229	257	285	
156		312	340	368	396	424	451	479	507	535	562	
157		590	618	645	673	700	728	756	783	811	838	
158		866	893	921	948	976	003	030	058	085	112	27
159	20	140	167	194	222	249	276	303	330	358	385	
160		412	439	466	493	520	548	575	602	629	656	26
161		683	710	737	763	790	817	844	871	898	925	
162		952	978	005	032	059	085	112	139	165	192	
163	21	219	245	272	299	325	352	378	405	431	458	
164		484	511	537	564	590	617	643	669	696	722	
165		743	775	801	827	854	880	906	932	958	985	26
166	22	011	037	063	089	115	141	167	194	220	246	
167		272	298	324	350	376	401	427	453	479	505	
168		531	557	583	608	634	660	686	712	737	763	
169		789	814	840	866	891	917	943	968	994	019	26
	L.	0	1	2	3	4	5	6	7	8	9	

N.	L. 0	1	2	3	4	5	6	7	8	9	D.
170	23 045	070	096	121	147	172	198	223	249	274	25
171	300	325	350	376	401	426	452	477	502	528	
172	553	578	603	629	654	679	704	729	754	779	
173	805	830	855	880	905	930	955	980	005*030		
174	24 055	080	105	130	155	180	204	229	254	279	
175	304	329	353	378	403	428	452	477	502	527	
176	551	576	601	625	650	674	699	724	748	773	
177	797	822	846	871	895	920	944	969	993*018		
178	25 042	066	091	115	139	164	188	212	237	261	24
179	285	310	334	358	382	406	431	455	479	503	
180	527	551	575	600	624	648	672	696	720	744	
181	768	792	816	840	864	888	912	935	959	983	
182	26 007	031	055	079	102	126	150	174	198	221	
183	245	269	293	316	340	364	387	411	435	458	
184	482	505	529	553	576	600	623	647	670	694	
185	717	741	764	788	811	834	858	881	905	928	
186	951	975	998*021	*045		*068	*091	*114	*138	*161	23
187	27 184	207	231	254	277	300	323	346	370	393	
188	416	439	462	485	508	531	554	577	600	623	
189	646	669	692	715	738	761	784	807	830	852	
190	875	898	921	944	967	989*012	*035	*058	*081		
191	28 103	126	149	171	194	217	240	262	285	307	
192	330	353	375	398	421	443	466	488	511	533	
193	556	578	601	623	646	668	691	713	735	758	
194	780	803	825	847	870	892	914	937	959	981	22
195	29 003	026	048	070	092	115	137	159	181	203	
196	226	248	270	292	314	336	358	380	403	425	
197	447	469	491	513	535	557	579	601	623	645	
198	667	688	710	732	754	776	798	820	842	863	
199	885	907	929	951	973	994*016	*038	*060	*081		
200	30 103	125	146	168	190	211	233	255	276	298	
201	320	341	363	384	406	428	449	471	492	514	
202	535	557	578	600	621	643	664	685	707	728	
203	750	771	792	814	835	856	878	899	920	942	
204	963	984*006	*027	*048		*069	*091	*112	*133	*154	21
	L. 0	1	2	3	4	5	6	7	8	9	

N.	L. 0	1	2	3	4	5	6	7	8	9	D.
205	31 175	197	218	239	260	281	302	323	345	366	21
206	387	408	429	450	471	492	513	534	555	576	
207	597	618	639	660	681	702	723	744	765	785	
208	806	827	848	869	890	911	931	952	973	994	
209	32 015	035	056	077	098	118	139	160	181	201	
210	222	243	263	284	305	325	346	366	387	408	
211	428	449	469	490	510	531	552	572	593	613	
212	634	654	675	695	715	736	756	777	797	818	
213	838	858	879	899	919	940	960	980	*001	*021	20
214	33 041	062	082	102	122	143	163	183	203	224	
215	244	264	284	304	325	345	365	385	405	425	
216	445	465	486	506	526	546	566	586	606	626	
217	646	666	686	706	726	746	766	786	806	826	
218	846	866	885	905	925	945	965	985	*005	*025	
219	34 044	064	084	104	124	143	163	183	203	223	
220	242	262	282	301	321	341	361	380	400	420	
221	439	459	479	498	518	537	557	577	596	616	
222	635	655	674	694	713	733	753	772	792	811	
223	830	850	869	889	908	928	947	967	986	*005	
224	35 025	044	064	083	102	122	141	160	180	199	19
225	218	238	257	276	295	315	334	353	372	392	
226	411	430	449	468	488	507	526	545	564	583	
227	603	622	641	660	679	698	717	736	755	774	
228	793	813	832	851	870	889	908	927	946	965	
229	984	*003	*021	*040	*059	*078	*097	*116	*135	*154	
230	36 173	192	211	229	248	267	286	305	324	342	
231	361	380	399	418	436	455	474	493	511	530	
232	549	568	586	605	624	642	661	680	698	717	
233	736	754	773	791	810	829	847	866	884	903	
234	922	940	959	977	996	*014	*033	*051	*070	*088	
235	37 107	125	144	162	181	199	218	236	254	273	
236	291	310	328	346	365	383	401	420	438	457	18
237	475	493	511	530	548	566	585	603	621	639	
238	658	676	694	712	731	749	767	785	803	822	
239	840	858	876	894	912	931	949	967	985	*003	18
	L. 0	1	2	3	4	5	6	7	8	9	

N.	L.	0	1	2	3	4	5	6	7	8	9	D.
240	38	021	039	057	075	093	112	130	148	166	184	18
241		202	220	238	256	274	292	310	328	346	364	
242		382	399	417	435	453	471	489	507	525	543	
243		561	578	596	614	632	650	668	686	703	721	
244		739	757	775	792	810	828	846	863	881	899	
245		917	934	952	970	987	*005	*023	*041	*058	*076	
246	39	094	111	129	146	164	182	199	217	235	252	
247		270	287	305	322	340	358	375	393	410	428	
248		445	463	480	498	515	533	550	568	585	602	
249		620	637	655	672	690	707	724	742	759	777	
250		794	811	829	846	863	881	898	915	933	950	17
251		967	985	*002	*019	*037	*054	*071	*088	*106	*123	
252	40	140	157	175	192	209	226	243	261	278	295	
253		312	329	346	364	381	398	415	432	449	466	
254		483	500	518	535	552	569	586	603	620	637	
255		654	671	688	705	722	739	756	773	790	807	
256		824	841	858	875	892	909	926	943	960	976	
257		993	*010	*027	*044	*061	*078	*095	*111	*128	*145	
258	41	162	179	196	212	229	246	263	280	296	313	
259		330	347	363	380	397	414	430	447	464	481	
260		497	514	531	547	564	581	597	614	631	647	
261		664	681	697	714	731	747	764	780	797	814	
262		830	847	863	880	896	913	929	946	963	979	
263		996	*012	*029	*045	*062	*078	*095	*111	*127	*144	
264	42	160	177	193	210	226	243	259	275	292	308	
265		325	341	357	374	390	406	423	439	455	472	
266		488	504	521	537	553	570	586	602	619	635	
267		651	667	684	700	716	732	749	765	781	797	
268		813	830	846	862	878	894	911	927	943	959	16
269		975	991	*008	*024	*040	*056	*072	*088	*104	*120	
270	43	136	152	169	185	201	217	233	249	265	281	
271		297	313	329	345	361	377	393	409	425	441	
272		457	473	489	505	521	537	553	569	584	600	
273		616	632	648	664	680	696	712	727	743	759	
274		775	791	807	823	838	854	870	886	902	917	16
	L.	0	1	2	3	4	5	6	7	8	9	

N.	L. 0	1	2	3	4	5	6	7	8	9	D.
275	43 933	949	965	981	996	*012	*028	*044	*059	*075	16
276	44 091	107	122	138	154	170	185	201	217	232	
277	248	264	279	295	311	326	342	358	373	389	
278	404	420	436	451	467	483	498	514	529	545	
279	560	576	592	607	623	638	654	669	685	700	
280	716	731	747	762	778	793	809	824	840	855	
281	871	886	902	917	932	948	963	979	994	*010	
282	45 025	040	056	071	086	102	117	133	148	163	15
283	179	194	209	225	240	255	271	286	301	317	
284	332	347	362	378	393	408	423	439	454	469	
285	484	500	515	530	545	561	576	591	606	621	
286	637	652	667	682	697	712	728	743	758	773	
287	788	803	818	834	849	864	879	894	909	924	
288	939	954	969	984	*000	*015	*030	*045	*060	*075	
289	46 090	105	120	135	150	165	180	195	210	225	
290	240	255	270	285	300	315	330	345	359	374	
291	389	404	419	434	449	464	479	494	509	523	14
292	538	553	568	583	598	613	627	642	657	672	
293	687	702	716	731	746	761	776	790	805	820	
294	835	850	864	879	894	909	923	938	953	967	
295	982	997	*012	*026	*041	*056	*070	*085	*100	*114	
296	47 129	144	159	173	188	202	217	232	246	261	
297	276	290	305	319	334	349	363	378	392	407	
298	422	436	451	465	480	494	509	524	538	553	
299	567	582	596	611	625	640	654	669	683	698	
300	712	727	741	756	770	784	799	813	828	842	
301	857	871	885	900	914	929	943	958	972	986	
302	48 001	015	029	044	058	073	087	101	116	130	14
303	144	159	173	187	202	216	230	244	259	273	
304	287	302	316	330	344	359	373	387	401	416	
305	430	444	458	473	487	501	515	530	544	558	
306	572	586	601	615	629	643	657	671	686	700	
307	714	728	742	756	770	785	799	813	827	841	
308	855	869	883	897	911	926	940	954	968	982	
309	996	*010	*024	*038	*052	*066	*080	*094	*108	*122	14
	L. 0	1	2	3	4	5	6	7	8	9	

N.	L. 0	1	2	3	4	5	6	7	8	9	D.
310	49 136	150	164	178	192	206	220	234	248	262	14
311	276	290	304	318	332	346	360	374	388	402	
312	415	429	443	457	471	485	499	513	527	541	
313	554	568	582	596	610	624	638	651	665	679	
314	693	707	721	734	748	762	776	790	803	817	
315	831	845	859	872	886	900	914	927	941	955	
316	969	982	996	*010	*024	*037	*051	*065	*079	*092	
317	50 106	120	133	147	161	174	188	202	215	229	
318	243	256	270	284	297	311	325	338	352	365	
319	379	393	406	420	433	447	461	474	488	501	
320	515	529	542	556	569	583	596	610	623	637	
321	651	664	678	691	705	718	732	745	759	772	
322	786	799	813	826	840	853	866	880	893	907	
323	920	934	947	961	974	987	*001	*014	*028	*041	13
324	51 055	068	081	095	108	121	135	148	162	175	
325	188	202	215	228	242	255	268	282	295	308	
326	322	335	348	362	375	388	402	415	428	441	
327	455	468	481	495	508	521	534	548	561	574	
328	587	601	614	627	640	654	667	680	693	706	
329	720	733	746	759	772	786	799	812	825	838	
330	851	865	878	891	904	917	930	943	957	970	
331	983	996	*009	*022	*035	*048	*061	*075	*088	*101	
332	52 114	127	140	153	166	179	192	205	218	231	
333	244	257	270	284	297	310	323	336	349	362	
334	375	388	401	414	427	440	453	466	479	492	
335	504	517	530	543	556	569	582	595	608	621	
336	634	647	660	673	686	699	711	724	737	750	
337	763	776	789	802	815	827	840	853	866	879	
338	892	905	917	930	943	956	969	982	994	*007	
339	53 020	033	046	058	071	084	097	110	122	135	
340	148	161	173	186	199	212	224	237	250	263	
341	275	288	301	314	326	339	352	364	377	390	
342	403	415	428	441	453	466	479	491	504	517	
343	529	542	555	567	580	593	605	618	631	643	
344	656	668	681	694	706	719	732	744	757	769	13
	L. 0	1	2	3	4	5	6	7	8	9	

N.	L. 0	1	2	3	4	5	6	7	8	9	D.
345	53 782	794	807	820	832	845	857	870	882	895	13
346	908	920	933	945	958	970	983	995	008	020	
347	54 033	045	058	070	083	095	108	120	133	145	
348	158	170	183	195	208	220	233	245	258	270	
349	283	295	307	320	332	345	357	370	382	394	
350	407	419	432	444	456	469	481	494	506	518	12
351	531	543	555	568	580	593	605	617	630	642	
352	654	667	679	691	704	716	728	741	753	765	
353	777	790	802	814	827	839	851	864	876	888	
354	900	913	925	937	949	962	974	986	998	011	
355	55 023	035	047	060	072	084	096	108	121	133	
356	145	157	169	182	194	206	218	230	242	255	
357	267	279	291	303	315	328	340	352	364	376	
358	388	400	413	425	437	449	461	473	485	497	
359	509	522	534	546	558	570	582	594	606	618	
360	630	642	654	666	678	691	703	715	727	739	
361	751	763	775	787	799	811	823	835	847	859	
362	871	883	895	907	919	931	943	955	967	979	12
363	991	003	015	027	038	050	062	074	086	098	
364	56 110	122	134	146	158	170	182	194	205	217	
365	229	241	253	265	277	289	301	312	324	336	
366	348	360	372	384	396	407	419	431	443	455	
367	467	478	490	502	514	526	538	549	561	573	
368	585	597	608	620	632	644	656	667	679	691	
369	703	714	726	738	750	761	773	785	797	808	
370	820	832	844	855	867	879	891	902	914	926	
371	937	949	961	972	984	996	008	019	031	043	
372	57 054	066	078	089	101	113	124	136	148	159	
373	171	183	194	206	217	229	241	252	264	276	
374	287	299	310	322	334	345	357	368	380	392	
375	403	415	426	438	449	461	473	484	496	507	
376	519	530	542	553	565	576	588	600	611	623	
377	634	646	657	669	680	692	703	715	726	738	
378	749	761	772	784	795	807	818	830	841	852	
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381	58	092	104	115	127	138	149	161	172	184	195	
382		206	218	229	240	252	263	274	286	297	309	
383		320	331	343	354	365	377	388	399	410	422	
384		433	444	456	467	478	490	501	512	524	535	
385		546	557	569	580	591	602	614	625	636	647	
386		659	670	681	692	704	715	726	737	749	760	
387		771	782	794	805	816	827	838	850	861	872	
388		883	894	906	917	928	939	950	961	973	984	
389		995*	006*	017*	028*	040	*051	*062	*073	*084	*095	
390	59	106	118	129	140	151	162	173	184	195	207	
391		218	229	240	251	262	273	284	295	306	318	
392		329	340	351	362	373	384	395	406	417	428	
393		439	450	461	472	483	494	506	517	528	539	
394		550	561	572	583	594	605	616	627	638	649	
395		660	671	682	693	704	715	726	737	748	759	11
396		770	780	791	802	813	824	835	846	857	868	
397		879	890	901	912	923	934	945	956	966	977	
398		988	999*	010*	021*	032	*043	*054	*065	*076	086	
399	60	097	108	119	130	141	152	163	173	184	195	
400		206	217	228	239	249	260	271	282	293	304	
401		314	325	336	347	358	369	379	390	401	412	
402		423	433	444	455	466	477	487	498	509	520	
403		531	541	552	563	574	584	595	606	617	627	
404		638	649	660	670	681	692	703	713	724	735	
405		746	756	767	778	788	799	810	821	831	842	
406		853	863	874	885	895	906	917	927	938	949	
407		959	970	981	991*	002	*013	*023	*034	*045	*055	
408	61	066	077	087	098	109	119	130	140	151	162	
409		172	183	194	204	215	225	236	247	257	268	
410		278	289	300	310	321	331	342	352	363	374	
411		384	395	405	416	426	437	448	458	469	479	
412		490	500	511	521	532	542	553	563	574	584	
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415	61	805	815	826	836	847	857	868	878	888	899	11
416		909	920	930	941	951	962	972	982	993	*003	
417	62	014	024	034	045	055	066	076	086	097	107	
418		118	128	138	149	159	170	180	190	201	211	
419		221	232	242	252	263	273	284	294	304	315	10
420		325	335	346	356	366	377	387	397	408	418	
421		428	439	449	459	469	480	490	500	511	521	
422		531	542	552	562	572	583	593	603	613	624	
423		634	644	655	665	675	685	696	706	716	726	
424		737	747	757	767	778	788	798	808	818	829	
425		839	849	859	870	880	890	900	910	921	931	
426		941	951	961	972	982	992	*002	*012	*022	*033	
427	63	043	053	063	073	083	094	104	114	124	134	
428		144	155	165	175	185	195	205	215	225	236	
429		246	256	266	276	286	296	306	317	327	337	
430		347	357	367	377	387	397	407	417	428	438	
431		448	458	468	478	488	498	508	518	528	538	
432		548	558	568	579	589	599	609	619	629	639	10
433		649	659	669	679	689	699	709	719	729	739	
434		749	759	769	779	789	799	809	819	829	839	
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436		949	959	969	979	988	998	*008	*018	*028	*038	
437	64	048	058	068	078	088	098	108	118	128	137	
438		147	157	167	177	187	197	207	217	227	237	
439		246	256	266	276	286	296	306	316	326	335	
440		345	355	365	375	385	395	404	414	424	434	
441		444	454	464	473	483	493	503	513	523	532	
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443		640	650	660	670	680	689	699	709	719	729	
444		738	748	753	768	777	787	797	807	816	826	
445		836	846	856	865	875	885	895	904	914	924	
446		933	943	953	963	972	982	992	*002	*011	*021	
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448		128	137	147	157	167	176	186	196	205	215	
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452		514	523	533	543	552	562	571	581	591	600	
453		610	619	629	639	648	658	667	677	686	696	
454		706	715	725	734	744	753	763	772	782	792	
455		801	811	820	830	839	849	858	868	877	887	
456		896	906	916	925	935	944	954	963	973	982	
457		992*	001*	011*	020*	030	*039*	049*	058*	068*	077	
458	66	087	096	106	115	124	134	143	153	162	172	
459		181	191	200	210	219	229	238	247	257	266	
460		276	285	295	304	314	323	332	342	351	361	
461		370	380	389	398	408	417	427	436	445	455	
462		464	474	483	492	502	511	521	530	539	549	
463		558	567	577	586	596	605	614	624	633	642	
464		652	661	671	680	689	699	708	717	727	736	
465		745	755	764	773	783	792	801	811	820	829	
466		839	848	857	867	876	885	894	904	913	922	9
467		932	941	950	960	969	978	987	997*	006*	015	
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469		117	127	136	145	154	164	173	182	191	201	
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472		394	403	413	422	431	440	449	459	468	477	
473		486	495	504	514	523	532	541	550	560	569	
474		578	587	596	605	614	624	633	642	651	660	
475		669	679	688	697	706	715	724	733	742	752	
476		761	770	779	788	797	806	815	825	834	843	
477		852	861	870	879	888	897	906	916	925	934	
478		943	952	961	970	979	988	997*	006*	015*	024	
479	68	034	043	052	061	070	079	088	097	106	115	
480		124	133	142	151	160	169	178	187	196	205	
481		215	224	233	242	251	260	269	278	287	296	
482		305	314	323	332	341	350	359	368	377	386	
483		395	404	413	422	431	440	449	458	467	476	
484		485	494	502	511	520	529	538	547	556	565	9
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487	753	762	771	780	789	797	806	815	824	833	
488	842	851	860	869	878	886	895	904	913	922	
489	931	940	949	958	966	975	984	993	*002	*011	
490	69 020	028	037	046	055	064	073	082	090	099	
491	108	117	126	135	144	152	161	170	179	188	
492	197	205	214	223	232	241	249	258	267	276	
493	285	294	302	311	320	329	338	346	355	364	
494	373	381	390	399	408	417	425	434	443	452	
495	461	469	478	487	496	504	513	522	531	539	
496	548	557	566	574	583	592	601	609	618	627	
497	636	644	653	662	671	679	688	697	705	714	
498	723	732	740	749	758	767	775	784	793	801	
499	810	819	827	836	845	854	862	871	880	888	
500	897	906	914	923	932	940	949	958	966	975	9
501	984	992	*001	*010	*018	*027	*036	*044	*053	*062	
502	70 070	079	088	096	105	114	122	131	140	148	
503	157	165	174	183	191	200	209	217	226	234	
504	243	252	260	269	278	286	295	303	312	321	
505	329	338	346	355	364	372	381	389	398	406	
506	415	424	432	441	449	458	467	475	484	492	
507	501	509	518	526	535	544	552	561	569	578	
508	586	595	603	612	621	629	638	646	655	663	
509	672	680	689	697	706	714	723	731	740	749	
510	757	766	774	783	791	800	808	817	825	834	
511	842	851	859	868	876	885	893	902	910	919	
512	927	935	944	952	961	969	978	986	995	*003	
513	71 012	020	029	037	046	054	063	071	079	088	
514	096	105	113	122	130	139	147	155	164	172	
515	181	189	198	206	214	223	231	240	248	257	
516	265	273	282	290	299	307	315	324	332	341	
517	349	357	366	374	383	391	399	408	416	425	
518	433	441	450	458	466	475	483	492	500	508	
519	517	525	533	542	550	559	567	575	584	592	8
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520	71 600	609	617	625	634	642	650	659	667	675	8
521	684	692	700	709	717	725	734	742	750	759	
522	767	775	784	792	800	809	817	825	834	842	
523	850	858	867	875	883	892	900	908	917	925	
524	933	941	950	958	966	975	983	991	999	*008	
525	72 016	024	032	041	049	057	066	074	082	090	
526	099	107	115	123	132	140	148	156	165	173	
527	181	189	198	206	214	222	230	239	247	255	
528	263	272	280	288	296	304	313	321	329	337	
529	346	354	362	370	378	387	395	403	411	419	
530	428	436	444	452	460	469	477	485	493	501	
531	509	518	526	534	542	550	558	567	575	583	
532	591	599	607	616	624	632	640	648	656	665	
533	673	681	689	697	705	713	722	730	738	746	
534	754	762	770	779	787	795	803	811	819	827	
535	835	843	852	860	868	876	884	892	900	908	8
536	916	925	933	941	949	957	965	973	981	989	
537	997	*006	*014	*022	*030	*038	*046	*054	*062	*070	
538	73 078	086	094	102	111	119	127	135	143	151	
539	159	167	175	183	191	199	207	215	223	231	
540	239	247	255	263	272	280	288	296	304	312	
541	320	328	336	344	352	360	368	376	384	392	
542	400	408	416	424	432	440	448	456	464	472	
543	480	488	496	504	512	520	528	536	544	552	
544	560	568	576	584	592	600	608	616	624	632	
545	640	648	656	664	672	679	687	695	703	711	
546	719	727	735	743	751	759	767	775	783	791	
547	799	807	815	823	830	838	846	854	862	870	
548	878	886	894	902	910	918	926	933	941	949	
549	957	965	973	981	989	997	*005	*013	*020	*028	
550	74 036	044	052	060	068	076	084	092	099	107	
551	115	123	131	139	147	155	162	170	178	186	
552	194	202	210	218	225	233	241	249	257	265	
553	273	280	288	296	304	312	320	327	335	343	
554	351	359	367	374	382	390	398	406	414	421	8
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556		507	515	523	531	539	547	554	562	570	578	
557		586	593	601	609	617	624	632	640	648	656	
558		663	671	679	687	695	702	710	718	726	733	
559		741	749	757	764	772	780	788	796	803	811	
560		819	827	834	842	850	858	865	873	881	889	
561		896	904	912	920	927	935	943	950	958	966	
562		974	981	989	997	*005	*012	*020	*028	*035	*043	
563	75	051	059	066	074	082	089	097	105	113	120	
564		128	136	143	151	159	166	174	182	189	197	
565		205	213	220	228	236	243	251	259	266	274	
566		282	289	297	305	312	320	328	335	343	351	
567		358	366	374	381	389	397	404	412	420	427	
568		435	442	450	458	465	473	481	488	496	504	
569		511	519	526	534	542	549	557	565	572	580	
570		587	595	603	610	618	626	633	641	648	656	7
571		664	671	679	686	694	702	709	717	724	732	
572		740	747	755	762	770	778	785	793	800	808	
573		815	823	831	838	846	853	861	868	876	884	
574		891	899	906	914	921	929	937	944	952	959	
575		967	974	982	989	997	*005	*012	*020	*027	*035	
576	76	042	050	057	065	072	080	087	095	103	110	
577		118	125	133	140	148	155	163	170	178	185	
578		193	200	208	215	223	230	238	245	253	260	
579		268	275	283	290	298	305	313	320	328	335	
580		343	350	358	365	373	380	388	395	403	410	
581		418	425	433	440	448	455	462	470	477	485	
582		492	500	507	515	522	530	537	545	552	559	
583		567	574	582	589	597	604	612	619	626	634	
584		641	649	656	664	671	678	686	693	701	708	
585		716	723	730	738	745	753	760	768	775	782	
586		790	797	805	812	819	827	834	842	849	856	
587		864	871	879	886	893	901	908	916	923	930	
588		938	945	953	960	967	975	982	989	997	*004	
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591	159	166	173	181	188	195	203	210	217	225	
592	232	240	247	254	262	269	276	283	291	298	
593	305	313	320	327	335	342	349	357	364	371	
594	379	386	393	401	408	415	422	430	437	444	
595	452	459	466	474	481	488	495	503	510	517	
596	525	532	539	546	554	561	568	576	583	590	
597	597	605	612	619	627	634	641	648	656	663	
598	670	677	685	692	699	706	714	721	728	735	
599	743	750	757	764	772	779	786	793	801	808	
600	815	822	830	837	844	851	859	866	873	880	
601	887	895	902	909	916	924	931	938	945	952	
602	960	967	974	981	988	996	003	010	017	025	
603	78 032	039	046	053	061	068	075	082	089	097	
604	104	111	118	125	132	140	147	154	161	168	
605	176	183	190	197	204	211	219	226	233	240	7
606	247	254	262	269	276	283	290	297	305	312	
607	319	326	333	340	347	355	362	369	376	383	
608	390	398	405	412	419	426	433	440	447	455	
609	462	469	476	483	490	497	504	512	519	526	
610	533	540	547	554	561	569	576	583	590	597	
611	604	611	618	625	633	640	647	654	661	668	
612	675	682	689	696	704	711	718	725	732	739	
613	746	753	760	767	774	781	789	796	803	810	
614	817	824	831	838	845	852	859	866	873	880	
615	888	895	902	909	916	923	930	937	944	951	
616	958	965	972	979	986	993	000	007	014	021	
617	79 029	036	043	050	057	064	071	078	085	092	
618	099	106	113	120	127	134	141	148	155	162	
619	169	176	183	190	197	204	211	218	225	232	
620	239	246	253	260	267	274	281	288	295	302	
621	309	316	323	330	337	344	351	358	365	372	
622	379	386	393	400	407	414	421	428	435	442	
623	449	456	463	470	477	484	491	498	505	511	
624	518	525	532	539	546	553	560	567	574	581	7
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625	79	588	595	602	609	616	623	630	637	644	650	7
626		657	664	671	678	685	692	699	706	713	720	
627		727	734	741	748	754	761	768	775	782	789	
628		796	803	810	817	824	831	837	844	851	858	
629		865	872	879	886	893	900	906	913	920	927	
630		934	941	948	955	962	969	975	982	989	996	
631	80	003	010	017	024	030	037	044	051	058	065	
632		072	079	085	092	099	106	113	120	127	134	
633		140	147	154	161	168	175	182	188	195	202	
634		209	216	223	229	236	243	250	257	264	271	
635		277	284	291	298	305	312	318	325	332	339	
636		346	353	359	366	373	380	387	393	400	407	
637		414	421	428	434	441	448	455	462	468	475	
638		482	489	496	502	509	516	523	530	536	543	
639		550	557	564	570	577	584	591	598	604	611	
640		618	625	632	638	645	652	659	665	672	679	7
641		686	693	699	706	713	720	726	733	740	747	
642		754	760	767	774	781	787	794	801	808	814	
643		821	828	835	841	848	855	862	868	875	882	
644		889	895	902	909	916	922	929	936	943	949	
645		956	963	969	976	983	990	996	*003	*010	*017	
646	81	023	030	037	043	050	057	064	070	077	084	
647		090	097	104	111	117	124	131	137	144	151	
648		158	164	171	178	184	191	198	204	211	218	
649		224	231	238	245	251	258	265	271	278	285	
650		291	298	305	311	318	325	331	338	345	351	
651		358	365	371	378	385	391	398	405	411	418	
652		425	431	438	445	451	458	465	471	478	485	
653		491	498	505	511	518	525	531	538	544	551	
654		558	564	571	578	584	591	598	604	611	617	
655		624	631	637	644	651	657	664	671	677	684	
656		690	697	704	710	717	723	730	737	743	750	
657		757	763	770	776	783	790	796	803	809	816	
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662	086	092	099	105	112	119	125	132	138	145	
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668	478	484	491	497	504	510	517	523	530	536	
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671	672	679	685	692	698	705	711	718	724	730	
672	737	743	750	756	763	769	776	782	789	795	
673	802	808	814	821	827	834	840	847	853	860	
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676	995*	001*	008*	014*	020	*027	*033	*040	*046	*052	
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678	123	129	136	142	149	155	161	168	174	181	
679	187	193	200	206	213	219	225	232	238	245	
680	251	257	264	270	276	283	289	296	302	308	
681	315	321	327	334	340	347	353	359	366	372	
682	378	385	391	398	404	410	417	423	429	436	
683	442	448	455	461	467	474	480	487	493	499	
684	506	512	518	525	531	537	544	550	556	563	
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686	632	639	645	651	658	664	670	677	683	689	
687	696	702	708	715	721	727	734	740	746	753	
688	759	765	771	778	784	790	797	803	809	816	
689	822	828	835	841	847	853	860	866	872	879	
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692	84 011	017	023	029	036	042	048	055	061	067	
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699	448	454	460	466	473	479	485	491	497	504	
700	510	516	522	528	535	541	547	553	559	566	
701	572	578	584	590	597	603	609	615	621	628	
702	634	640	646	652	658	665	671	677	683	689	
703	696	702	708	714	720	726	733	739	745	751	
704	757	763	770	776	782	788	794	800	807	813	
705	819	825	831	837	844	850	856	862	868	874	
706	880	887	893	899	905	911	917	924	930	936	
707	942	948	954	960	967	973	979	985	991	997	
708	85 003	009	016	022	028	034	040	046	052	058	
709	065	071	077	083	089	095	101	107	114	120	
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711	187	193	199	205	211	217	224	230	236	242	
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713	309	315	321	327	333	339	345	352	358	364	
714	370	376	382	388	394	400	406	412	418	425	
715	431	437	443	449	455	461	467	473	479	485	
716	491	497	503	509	516	522	528	534	540	546	
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719	673	679	685	691	697	703	709	715	721	727	
720	733	739	745	751	757	763	769	775	781	788	
721	794	800	806	812	818	824	830	836	842	848	
722	854	860	866	872	878	884	890	896	902	908	
723	914	920	926	932	938	944	950	956	962	968	
724	974	980	986	992	998	*004	*010	*016	*022	*028	
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726	094	100	106	112	118	124	130	136	141	147	
727	153	159	165	171	177	183	189	195	201	207	
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732	451	457	463	469	475	481	487	493	499	504	
733	510	516	522	528	534	540	546	552	558	564	
734	570	576	581	587	593	599	605	611	617	623	
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736	688	694	700	705	711	717	723	729	735	741	
737	747	753	759	764	770	776	782	788	794	800	
738	806	812	817	823	829	835	841	847	853	859	
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741	982	988	994	999	*005	*011	*017	*023	*029	*035	
742	87 040	046	052	058	064	070	075	081	087	093	
743	099	105	111	116	122	128	134	140	146	151	
744	157	163	169	175	181	186	192	198	204	210	
745	216	221	227	233	239	245	251	256	262	268	6
746	274	280	286	291	297	303	309	315	320	326	
747	332	338	344	349	355	361	367	373	379	384	
748	390	396	402	408	413	419	425	431	437	442	
749	448	454	460	466	471	477	483	489	495	500	
750	506	512	518	523	529	535	541	547	552	558	
751	564	570	576	581	587	593	599	604	610	616	
752	622	628	633	639	645	651	656	662	668	674	
753	679	685	691	697	703	708	714	720	726	731	
754	737	743	749	754	760	766	772	777	783	789	
755	795	800	806	812	818	823	829	835	841	846	
756	852	858	864	869	875	881	887	892	898	904	
757	910	915	921	927	933	938	944	950	955	961	
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760	081	087	093	098	104	110	116	121	127	133	
761	138	144	150	156	161	167	173	178	184	190	
762	195	201	207	213	218	224	230	235	241	247	
763	252	258	264	270	275	281	287	292	298	304	
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766	423	429	434	440	446	451	457	463	468	474	
767	480	485	491	497	502	508	513	519	525	530	
768	536	542	547	553	559	564	570	576	581	587	
769	593	598	604	610	615	621	627	632	638	643	
770	649	655	660	666	672	677	683	689	694	700	
771	705	711	717	722	728	734	739	745	750	756	
772	762	767	773	779	784	790	795	801	807	812	
773	818	824	829	835	840	846	852	857	863	868	
774	874	880	885	891	897	902	908	913	919	925	
775	930	936	941	947	953	958	964	969	975	981	
776	986	992	997	*003	*009	*014	*020	*025	*031	*037	
777	89 042	048	053	059	064	070	076	081	087	092	
778	098	104	109	115	120	126	131	137	143	148	
779	154	159	165	170	176	182	187	193	198	204	
780	209	215	221	226	232	237	243	248	254	260	6
781	265	271	276	282	287	293	298	304	310	315	
782	321	326	332	337	343	348	354	360	365	371	
783	376	382	387	393	398	404	409	415	421	426	
784	432	437	443	448	454	459	465	470	476	481	
785	487	492	498	504	509	515	520	526	531	537	
786	542	548	553	559	564	570	575	581	586	592	
787	597	603	609	614	620	625	631	636	642	647	
788	653	658	664	669	675	680	686	691	697	702	
789	708	713	719	724	730	735	741	746	752	757	
790	763	768	774	779	785	790	796	801	807	812	
791	818	823	829	834	840	845	851	856	862	867	
792	873	878	883	889	894	900	905	911	916	922	
793	927	933	938	944	949	955	960	966	971	977	
794	982	988	993	998	*004	*009	*015	*020	*026	*031	
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797	146	151	157	162	168	173	179	184	189	195	
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803		472	477	482	488	493	499	504	509	515	520	
804		526	531	536	542	547	553	558	563	569	574	
805		580	585	590	596	601	607	612	617	623	628	
806		634	639	644	650	655	660	666	671	677	682	
807		687	693	698	703	709	714	720	725	730	736	
808		741	747	752	757	763	768	773	779	784	789	
809		795	800	806	811	816	822	827	832	838	843	
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811		902	907	913	918	924	929	934	940	945	950	
812		956	961	966	972	977	982	988	993	998	*004	
813	91	009	014	020	025	030	036	041	046	052	057	
814		062	068	073	078	084	089	094	100	105	110	
815		116	121	126	132	137	142	148	153	158	164	5
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817		222	228	233	238	243	249	254	259	265	270	
818		275	281	286	291	297	302	307	312	318	323	
819		328	334	339	344	350	355	360	365	371	376	
820		381	387	392	397	403	408	413	418	424	429	
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822		487	492	498	503	508	514	519	524	529	535	
823		540	545	551	556	561	566	572	577	582	587	
824		593	598	603	609	614	619	624	630	635	640	
825		645	651	656	661	666	672	677	682	687	693	
826		698	703	709	714	719	724	730	735	740	745	
827		751	756	761	766	772	777	782	787	793	798	
828		803	808	814	819	824	829	834	840	845	850	
829		855	861	866	871	876	882	887	892	897	903	
830		908	913	918	924	929	934	939	944	950	955	
831		960	965	971	976	981	986	991	997	*002	*007	
832	92	012	018	023	028	033	038	044	049	054	059	
833		065	070	075	080	085	091	096	101	106	111	
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838	324	330	335	340	345	350	355	361	366	371	
839	376	381	387	392	397	402	407	412	418	423	
840	428	433	438	443	449	454	459	464	469	474	
841	480	485	490	495	500	505	511	516	521	526	
842	531	536	542	547	552	557	562	567	572	578	
843	583	588	593	598	603	609	614	619	624	629	
844	634	639	645	650	655	660	665	670	675	681	
845	686	691	696	701	706	711	716	722	727	732	
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848	840	845	850	855	860	865	870	875	881	886	
849	891	896	901	906	911	916	921	927	932	937	
850	942	947	952	957	962	967	973	978	983	988	5
851	993	998*	003*	008*	013	018	024*	029*	034*	039	
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853	095	100	105	110	115	120	125	131	136	141	
854	146	151	156	161	166	171	176	181	186	192	
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856	247	252	258	263	268	273	278	283	288	293	
857	298	303	308	313	318	323	328	334	339	344	
858	349	354	359	364	369	374	379	384	389	394	
859	399	404	409	414	420	425	430	435	440	445	
860	450	455	460	465	470	475	480	485	490	495	
861	500	505	510	515	520	526	531	536	541	546	
862	551	556	561	566	571	576	581	586	591	596	
863	601	606	611	616	621	626	631	636	641	646	
864	651	656	661	666	671	676	682	687	692	697	
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872	052	057	062	067	072	077	082	086	091	096	
873	101	106	111	116	121	126	131	136	141	146	
874	151	156	161	166	171	176	181	186	191	196	
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876	250	255	260	265	270	275	280	285	290	295	
877	300	305	310	315	320	325	330	335	340	345	
878	349	354	359	364	369	374	379	384	389	394	
879	399	404	409	414	419	424	429	433	438	443	
880	448	453	458	463	468	473	478	483	488	493	
881	498	503	507	512	517	522	527	532	537	542	
882	547	552	557	562	567	571	576	581	586	591	
883	596	601	606	611	616	621	626	630	635	640	
884	645	650	655	660	665	670	675	680	685	689	
885	694	699	704	709	714	719	724	729	734	738	5
886	743	748	753	758	763	768	773	778	783	787	
887	792	797	802	807	812	817	822	827	832	836	
888	841	846	851	856	861	866	871	876	880	885	
889	890	895	900	905	910	915	919	924	929	934	
890	939	944	949	954	959	963	968	973	978	983	
891	988	993	998	*002	*007	*012	*017	*022	*027	*032	
892	95 036	041	046	051	056	061	066	071	075	080	
893	085	090	095	100	105	109	114	119	124	129	
894	134	139	143	148	153	158	163	168	173	177	
895	182	187	192	197	202	207	211	216	221	226	
896	231	236	240	245	250	255	260	265	270	274	
897	279	284	289	294	299	303	308	313	318	323	
898	328	332	337	342	347	352	357	361	366	371	
899	376	381	386	390	395	400	405	410	415	419	
900	424	429	434	439	444	448	453	458	463	468	
901	472	477	482	487	492	497	501	506	511	516	
902	521	525	530	535	540	545	550	554	559	564	
903	569	574	578	583	588	593	598	602	607	612	
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907		761	766	770	775	780	785	789	794	799	804	
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909		856	861	866	871	875	880	885	890	895	899	
910		904	909	914	918	923	928	933	938	942	947	
911		952	957	961	966	971	976	980	985	990	995	
912		999*	004*	009*	014*	019	*023	*028	*033	*088	042	
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921		426	431	435	440	445	450	454	459	464	468	
922		473	478	483	487	492	497	501	506	511	515	
923		520	525	530	534	539	544	548	553	558	562	
924		567	572	577	581	586	591	595	600	605	609	
925		614	619	624	628	633	638	642	647	652	656	
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928		755	759	764	769	774	778	783	788	792	797	
929		802	806	811	816	820	825	830	834	839	844	
930		848	853	858	862	867	872	876	881	886	890	
931		895	900	904	909	914	918	923	928	932	937	
932		942	946	951	956	960	965	970	974	979	984	
933		988	993	997*	002*	007	*011	*016	*021	*025	*030	
934	97	035	039	044	049	053	058	063	067	072	077	
935		081	086	090	095	100	104	109	114	118	123	
936		128	132	137	142	146	151	155	160	165	169	
937		174	179	183	188	192	197	202	206	211	216	
938		220	225	230	234	239	243	248	253	357	262	
939		267	271	276	280	285	290	294	299	304	308	5
		0	1	2	3	4	5	6	7	8	9	

N.	L	0	1	2	3	4	5	6	7	8	9	D.
940	97	313	317	322	327	331	336	340	345	350	354	5
941		359	364	368	373	377	382	387	391	396	400	
942		405	410	414	419	424	428	433	437	442	447	
943		451	456	460	465	470	474	479	483	488	493	
944		497	502	506	511	516	520	525	529	534	539	
945		543	548	552	557	562	566	571	575	580	585	
946		589	594	598	603	607	612	617	621	626	630	
947		635	640	644	649	653	658	663	667	672	676	
948		681	685	690	695	699	704	708	713	717	722	
949		727	731	736	740	745	749	754	759	763	768	
950		772	777	782	786	791	795	800	804	809	813	
951		818	823	827	832	836	841	845	850	855	859	
952		864	868	873	877	882	886	891	896	900	905	
953		909	914	918	923	928	932	937	941	946	950	
954		955	959	964	968	973	978	982	987	991	996	
955	98	000	005	009	014	019	023	028	032	037	041	5
956		046	050	055	059	064	068	073	078	082	087	
957		091	096	100	105	109	114	118	123	127	132	
958		137	141	146	150	155	159	164	168	173	177	
959		182	186	191	195	200	204	209	214	218	223	
960		227	232	236	241	245	250	254	259	263	268	
961		272	277	281	286	290	295	299	304	308	313	
962		318	322	327	331	336	340	345	349	354	358	
963		363	367	372	376	381	385	390	394	399	403	
964		408	412	417	421	426	430	435	439	444	448	
965		453	457	462	466	471	475	480	484	489	493	
966		498	502	507	511	516	520	525	529	534	538	
967		543	547	552	556	561	565	570	574	579	583	
968		588	592	597	601	605	610	614	619	623	628	
969		632	637	641	646	650	655	659	664	668	673	
970		677	682	686	691	695	700	704	709	713	717	
971		722	726	731	735	740	744	749	753	758	762	
972		767	771	776	780	784	789	793	798	802	807	
973		811	816	820	825	829	834	838	843	847	851	
974		856	860	865	869	874	878	883	887	892	896	4
	L.	0	1	2	3	4	5	6	7	8	9	

N.	L.	0	1	2	3	4	5	6	7	8	9	D.
975	98	900	905	909	914	918	923	927	932	936	941	4
976		945	949	954	958	963	967	972	976	981	985	
977		989	994	998	*003	*007	*012	*016	*021	*025	*029	
978	99	034	038	043	047	052	056	061	065	069	074	
979		078	083	087	092	096	100	105	109	114	118	
980		123	127	131	136	140	145	149	154	158	162	
981		167	171	176	180	185	189	193	198	202	207	
982		211	216	220	224	229	233	238	242	247	251	
983		255	260	264	269	273	277	282	286	291	295	
984		300	304	308	313	317	322	326	330	335	339	
985		344	348	352	357	361	366	370	374	379	383	
986		388	392	396	401	405	410	414	419	423	427	
987		432	436	441	445	449	454	458	463	467	471	
988		476	480	484	489	493	498	502	506	511	515	
989		520	524	528	533	537	542	546	550	555	559	
990		564	568	572	577	581	585	590	594	599	603	
991		607	612	616	621	625	629	634	638	642	647	
992		651	656	660	664	669	673	677	682	686	691	
993		695	699	704	708	712	717	721	726	730	734	
994		739	743	747	752	756	760	765	769	774	778	
995		782	787	791	795	800	804	808	813	817	822	
996		826	830	835	839	843	848	852	856	861	865	
997		870	874	878	883	887	891	896	900	904	909	
998		913	917	922	926	930	935	939	944	948	952	
999		957	961	965	970	974	978	983	987	991	996	4
	L.	0	1	2	3	4	5	6	7	8	9	

La base de los logaritmos naturales ó de Napier

$e = 2,71828$ $\quad \log e = 0.43429$

$\log \log e = 9.63778$ $\quad \frac{1}{\log e} = 2.30259$

Para cambiar los logaritmos de Briggs en naturales, se multiplican por el módulo 2.30259.

Para cambiar los logaritmos naturales en los de Briggs, se multiplican por el módulo 0,43429.

Tabla II.

Valores naturales de las funciones trigonométricas

para los ángulos del I. cuadrante de 15 en 15 minutos.

Gr.	M.	Seno	Coseno	Tang.	Cotang.		
0	0	0,00 000	1,00 000	0,00 000	∞	90	0
	15	0,00 436	0,99 999	0,00 436	229,1 817		45
	30	0,00 873	0,99 996	0,00 873	114,5 887		30
	45	0 01 309	0,99 991	0,01 309	76,3 900		15
1	0	0,01 745	0,99 985	0,01 746	57,2 900	89	0
	15	0,02 181	0,99 976	0,02 182	45,8 294		45
	30	0,02 618	0,99 966	0,02 619	38,1 885		30
	45	0,03 054	0,99 953	0,03 055	32,7 303		15
2	0	0,03 490	0,99 939	0,03 492	28,6 363	88	0
	15	0,03 926	0,99 923	0,03 929	25,1 517		45
	30	0,04 362	0,99 905	0,04 366	22,9 038		30
	45	0,04 798	0,99 885	0,04 803	20,8 188		15
3	0	0,05 234	0 99 863	0,05 241	19,0 811	87	0
	15	0,05 669	0,99 839	0,05 678	17,6 106		45
	30	0,06 105	0,99 813	0,06 116	16,3 499		30
	45	0,06 540	0,99 786	0,06 554	15,2 571		15
4	0	0,06 976	0,99 756	0,06 993	14,3 007	86	0
	15	0,07 411	0,99 725	0,07 431	13,4 566		45
	30	0,07 846	0 99 692	0,07 870	12,7 062		30
	45	0,08 281	0,99 657	0,08 309	12,0 346		15
		Coseno	Seno	Cotang.	Tang.	Gr.	M.

Gr.	M.	Seno	Coseno	Tang.	Cotang.		
5	0	0,08 716	0,99 619	0,08 749	11,43 005	85	0
	15	0,09 150	0,99 580	0,09 189	10,88 292		45
	30	0,09 585	0,99 540	0,09 629	10,38 540		30
	45	0,10 019	0,99 497	0,10 069	9,93 101		15
6	0	0,10 453	0,99 452	0,10 510	9,51 436	84	0
	15	0,10 887	0,99 406	0,10 952	9,13 093		45
	30	0,11 320	0,99 357	0,11 394	8,77 689		30
	45	0 11 754	0,99 307	0,11 836	8,44 896		15
7	0	0,12 187	0,99 255	0,12 278	8,14 435	83	0
	15	0,12 620	0,99 200	0,12 722	7,86 064		45
	30	0,13 053	0,99 144	0,13 165	7,59 575		30
	45	0,13 485	0,99 087	0,13 609	7,34 786		15
8	0	0,13 917	0,99 027	0,14 054	7,11 537	82	0
	15	0,14 349	0,98 965	0,14 499	6,89 688		45
	30	0,14 781	0,98 902	0,14 945	6,69 116		30
	45	0,15 212	0,98 836	0,15 391	6,49 710		15
9	0	0,15 643	0,98 769	0,15 838	6,31 375	81	0
	15	0,16 074	0,98 700	0,16 286	6,14 023		45
	30	0,16 505	0,98 629	0,16 734	5,97 576		30
	45	0,16 935	0,98 556	0,17 183	5,81 966		15
10	0	0,17 365	0,98 481	0,17 633	5,67 128	80	0
	15	0,17 794	0,98 404	0,18 083	5,53 007		45
	30	0,18 224	0,98 325	0,18 534	5,39 552		30
	45	0,18 652	0,98 245	0,18 986	5 26 715		15
11	0	0,19 081	0 98 163	0,19 438	5,14 455	79	0
	15	0,19 509	0 98 079	0,19 891	5,02 734		45
	30	0,19 937	0,97 992	0,20 345	4,91 516		30
	45	0,20 364	0,97 905	0,20 800	4,80 769		15
12	0	0,20 791	0,97 815	0,21 256	4,70 463	78	0
	15	0,21 218	0,97 723	0,21 712	4,60 572		45
	30	0,21 644	0,97 630	0,22 169	4,51 071		30
	45	0,22 070	0,97 534	0 22 628	4,41 936		15
		Coseno	Seno	Cotang.	Tang.	Gr.	M.

Gr.	M.	Seno	Coseno	Tang.	Cotang.		
13	0	0,22 495	0,97 437	0,23 087	4,33 148	77	0
	15	0,22 920	0,97 338	0,23 547	4,24 685		45
	30	0,23 345	0,97 237	0,24 008	4,16 530		30
	45	0,23 769	0,97 134	0,24 470	4,08 666		15
14	0	0,24 192	0,97 030	0,24 933	4,01 078	76	0
	15	0,24 615	0,96 923	0,25 397	3,93 751		45
	30	0,25 038	0,96 815	0,25 862	3,86 671		30
	45	0 25 460	0,96 705	0,26 328	3,79 827		15
15	0	0,25 882	0,96 593	0,26 795	3,73 205	75	0
	15	0,26 303	0,96 479	0,27 263	3,66 796		45
	30	0,26 724	0,96 363	0,27 732	3,60 588		30
	45	0,27 144	0,96 246	0,28 203	3,54 573		15
16	0	0,27 564	0,96 126	0,28 675	3,48 741	74	0
	15	0,27 983	0,96 005	0,29 147	3,43 084		45
	30	0,28 402	0,95 882	0,29 621	3,37 594		30
	45	0,28 820	0,95 757	1,30 097	3,32 264		15
17	0	0,29 237	0,95 630	0,30 573	3,27 085	73	0
	15	0,29 654	0,95 502	0,31 051	3,22 053		45
	30	0,30 071	0,95 372	0,31 530	3,17 159		30
	45	0,30 486	0,95 240	0,32 010	3,12 400		15
18	0	0,30 902	0,95 106	0,32 492	3,07 768	72	0
	15	0,31 316	0,94 970	0,32 975	3,03 260		45
	30	0,31 730	0,94 832	0,33 460	2,98 869		30
	45	0,32 144	0,94 693	0,33 945	2 94 591		15
19	0	0,32 557	0,94 552	0,34 433	2,90 421	71	0
	15	0,32 969	0,94 409	0,34 922	2,86 356		45
	30	0,33 381	0,94 264	0,35 412	2,82 391		30
	45	0,33 792	0,94 118	0,35 904	2,78 523		15
20	0	0,34 202	0,93 969	0,36 397	2,74 748	70	0
	15	0,34 612	0,93 819	0,36 892	2,71 062		45
	30	0,35 021	0,93 667	0,37 388	2,67 462		30
	45	0,35 429	0,93 514	0,37 887	2,63 945		15
		Coseno	Seno	Cotang.	Tang.	Gr.	M.

Gr.	M.	Seno	Coseno	Tang.	Cotang.		
21	0	0,35 837	0,93 358	0.38 386	2,60 509	69	0
	15	0,36 244	0,93 201	0,38 888	2,57 150		45
	30	0,36 650	0,93 042	0,39 391	2,53 865		30
	45	0,37 056	0,92 881	0,39 896	2,50 652		15
22	0	0,37 461	0,92 718	0,40 403	2,47 509	68	0
	15	0,37 865	0,92 554	0,40 911	2,44 433		45
	30	0,38 268	0,92 388	0,41 421	2,41 421		30
	45	0,38 671	0,92 220	0,41 933	2,38 473		15
23	0	0,39 073	0,92 050	0,42 447	2,35 585	67	0
	15	0,39 474	0,91 879	0,42 963	2,32 756		45
	30	0,39 875	0,91 706	0,43 481	2,29 984		30
	45	0,40 275	0,91 531	0,44 001	2,27 267		15
24	0	0,40 674	0,91 355	0,44 523	2,24 604	66	0
	15	0,41 072	0,91 176	0,45 047	2,21 992		45
	30	0,41 469	0,90 996	0,45 573	2,19 430		30
	45	0,41 866	0,90 814	0,46 101	2,16 917		15
25	0	0,42 262	0,90 631	0.46 631	2,14 451	65	0
	15	0,42 657	0,90 446	0,47 163	2,12 030		45
	30	0,43 051	0,90 259	0,47 698	2,09 654		30
	45	0,43 445	0,90 070	0,48 234	2,07 321		15
26	0	0,43 837	0,89 879	0,48 773	2,05 030	64	0
	15	0,44 229	0,89 687	0,49 315	2,02 780		45
	30	0,44 620	0,89 493	0,49 858	2,00 569		30
	45	0,45 010	0,89 298	0,50 404	1,98 396		15
27	0	0,45 399	0,89 101	0,50 953	1,96 261	63	0
	15	0,45 787	0,88 902	0,51 503	1,94 162		45
	30	0,46 175	0,88 701	0,52 057	1,92 098		30
	45	0,46 561	0,88 499	0 52 613	1,90 069		15
28	0	0,46 947	0,88 295	0,53 171	1,88 073	62	0
	15	0,47 332	0,88 089	0,53 732	1,86 109		45
	30	0,47 716	0,87 882	0,54 296	1,84 177		30
	45	0,48 099	0,87 673	0,54 862	1 82 276		15
		Coseno	Seno	Cotang.	Tang.	Gr.	M.

Gr.	M.	Seno	Coseno	Tang.	Cotang.		
29	0	0,48 481	0,87 462	0,55 431	1,80 405	61	0
	15	0,48 862	0,87 250	0,56 003	1,78 563		45
	30	0,49 242	0,87 036	0,56 577	1,76 749		30
	45	0,49 622	0,86 820	0,57 155	1,74 964		15
30	0	0,50 000	0,86 603	0,57 735	1,73 205	60	0
	15	0,50 377	0,86 384	0,58 318	1,71 473		45
	30	0,50 754	0,86 163	0,58 905	1,69 766		30
	45	0,51 129	0,85 941	0,59 494	1,68 085		15
31	0	0,51 504	0,85 717	0,60 086	1,66 428	59	0
	15	0,51 877	0,85 491	0,60 681	1,64 795		45
	30	0,52 250	0,85 264	0,61 280	1,63 185		30
	45	0,52 621	0,85 035	0,61 882	1,61 598		15
32	0	0,52 992	0,84 805	0,62 487	1,60 033	58	0
	15	0,53 361	0,84 573	0,63 095	1,58 490		45
	30	0,53 730	0,84 339	0,63 707	1,56 969		30
	45	0,54 097	0,84 104	0,64 322	1,55 467		15
33	0	0,54 464	0,83 867	0,64 941	1,53 987	57	0
	15	0,54 829	0,83 629	0,65 563	1,52 525		45
	30	0,55 194	0,83 389	0,66 189	1,51 084		30
	45	0,55 557	0,83 147	0,66 818	1,49 661		15
34	0	0,55 919	0,82 904	0,67 451	1,48 256	56	0
	15	0,56 280	0,82 659	0,68 088	1,46 870		45
	30	0,56 641	0,82 413	0,68 728	1,45 501		30
	45	0,57 000	0,82 165	0,69 372	1,44 149		15
35	0	0,57 358	0,81 915	0,70 021	1,42 815	55	0
	15	0,57 715	0,81 664	0,70 673	1,41 497		45
	30	0,58 070	0,81 412	0,71 329	1,40 195		30
	45	0,58 425	0,81 157	0,71 990	1,38 909		15
36	0	0,58 779	0,80 902	0,72 654	1,37 638	54	0
	15	0,59 131	0,80 644	0,73 323	1,36 383		45
	30	0,59 482	0,80 386	0,73 996	1,35 142		30
	45	0,59 832	0,80 125	0,74 674	1,33 916		15
		Coseno	Seno	Cotang.	Tang.	Gr.	M.

Gr.	M.	Seno	Coseno	Tang.	Cotang.		
37	0	0,60 182	0,79 864	0,75 355	1,32 704	53	0
	15	0,60 529	0,79 600	0,76 042	1,31 507		45
	30	0,60 876	0,79 335	0,76 733	1,30 323		30
	45	0 61 222	0,79 069	0,77 428	1,29 152		15
38	0	0,61 566	0,78 801	0,78 129	1,27 994	52	0
	15	0,61 909	0,78 532	0,78 834	1,26 849		45
	30	0,62 251	0,78 261	0,79 544	1,25 717		30
	45	0,62 592	0,77 988	0,80 258	1,24 597		15
39	0	0,62 932	0,77 715	0,80 978	1,23 490	51	0
	15	0,63 271	0,77 439	0,81 703	1,22 394		45
	30	0,63 608	0,77 162	0,82 434	1,21 310		30
	45	0,63 944	0,76 884	0,83 169	1,20 237		15
40	0	0,64 279	0,76 604	0,83 910	1,19 175	50	0
	15	0,64 612	0,76 323	0,84 656	1,18 125		45
	30	0,64 945	0,76 041	0,85 408	1,17 085		30
	45	0,65 276	0,75 757	0,86 166	1,16 056		15
41	0	0,65 606	0,75 471	0,86 929	1,15 037	49	0
	15	0,65 935	0,75 184	0,87 698	1,14 028		45
	30	0,66 262	0,74 896	0,88 473	1,13 029		30
	45	0,66 588	0,74 606	0,89 253	1,12 041		15
42	0	0,66 913	0,74 314	0,90 040	1,11 061	48	0
	15	0,67 237	0,74 022	0,90 834	1,10 091		45
	30	0,67 559	0,73 728	0,91 633	1,09 131		30
	45	0,67 880	0,73 432	0,92 439	1,08 179		15
43	0	0,68 200	0,73 135	0,93 252	1,07 237	47	0
	15	0,68 518	0,72 837	0,94 071	1,06 303		45
	30	0,68 835	0,72 537	0,94 896	1,05 378		30
	45	0,69 151	0,72 236	0,95 729	1,04 461		15
44	0	0,69 466	0,71 934	0,96 569	1,03 553	46	0
	15	0,69 779	0,71 630	0,97 416	1,02 653		45
	30	0,70 091	0,71 325	0,98 270	1,01 761		30
	45	0,70 401	0,71 019	0,99 131	1,00 876		15
45	0	0,70 711	0,70 711	1,00 000	1,00 000	45	0
		Coseno	Seno	Cotang.	Tang.	Gr.	M.

TABLA III.

Logaritmos de algunes constantes.

Constantes.	Log.
$\pi = 3,14159$	0,49713
$\frac{1}{\pi} = 0,31831$	0,50285—1
$\frac{4}{3}\pi = 4,18879$	0,62209
$\pi^2 = 9,86960$	0,99430
$\sqrt{\pi} = 1,77245$	0,24857
$\sqrt[3]{\frac{\pi}{6}} = 0,805996$	0,90633—1
360°	2,55630
‖	
21600′	4,33445
‖	
1296000″	6,11261
El arco igual al radio es 57°17′ 44″.8	
ó en grados 57°, 2958	1,75812
en minutos 3437′,75	3,53627
en segundos 206264″,8	5,31443
Legua geográfica =7420,44 metros	3,87043
Diámetro del ecuador 1718,87 leg. geog.	3,23524
Longit. del eje de la tierra 1713,13 ,,	3,23379
Longitud del diámetro de una esfera de volúmen y superficie igual á la de la tierra 1716,96 leg. geog.	3,23476
Longitud de un meridiano 5390,98	3,73167
Longitud de un grado del ecuador 15,000 leg. geogr.	1,17609
Long. de un grado de meridiano en el ecuador 14,900 leg. geog.	1,17318
en el polo 15,050 leg. geog.	1,17755
1 Pie castellano =0,27863 metros	0,44503—1
1 Pie de Paris =0,32484 ,,	0,51167—1
1 Pie inglés =0,30479 ,,	0,48401—1
1 Pie de Roma =0,29759 ,,	0,47361—1
1 Pie del Rhin =0,31385 ,,	0,49673—1

TABLA IV.

Logaritmos de 5 decimales

PARA

las funciones trigonométricas.

0 Grad.

Min	Seno.	Tang.	Cotg.	Coseno	Min.
0	$-\infty$	$-\infty$	∞	10,00000	60
1	6,46373	6,46373	13,53627	10,00000	59
2	6,76476	6,76476	13,23524	10,00000	58
3	6,94085	6,94085	13,05915	10,00000	57
4	7,06579	7,06579	12,93421	10,00000	56
5	7,16270	7,16270	12,83730	10,00000	55
6	7,24188	7,24188	12,75812	10,00000	54
7	7,30882	7,30882	12,69118	10,00000	53
8	7,36682	7,36682	12,63318	10,00000	52
9	7,41797	7,41797	12,58203	10,00000	51
10	7,46373	7,46373	12,53627	10,00000	50
11	7,50512	7,50512	12,49488	10,00000	49
12	7,54291	7,54291	12,45709	10,00000	48
13	7,57767	7,57767	12,42233	10,00000	47
14	7,60985	7,60986	12,39014	10,00000	46
15	7,63982	7,63982	12,36018	10,00000	45
16	7,66784	7,66785	12,33215	10,00000	44
17	7,69417	7,69418	12,30582	9,99999	43
18	7,71900	7,71900	12,28100	9,99999	42
19	7,74248	7,74248	12,25752	9,99999	41
20	7,76475	7,76476	12,23524	9,99999	40
21	7,78594	7,78595	12,21405	9,99999	39
22	7,80615	7,80615	12,19385	9,99999	38
23	7,82545	7,82546	12,17454	9,99999	37
24	7,84393	7,84394	12,15606	9,99999	36
25	7,86166	7,86167	12,13833	9,99999	35
26	7,87870	7,87871	12,12129	9,99999	34
27	7,89509	7,89510	12,10490	9,99999	33
28	7,91088	7,91089	12,08911	9,99999	32
29	7,92612	7,92613	12,07387	9,99998	31
30	7,94084	7,94086	12,05914	9,99998	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

89 Grad.

0 Grad.

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	7,94084	7,94086	12,05914	9,99998	30
31	7,95508	7,95510	12,04490	9,99998	29
32	7,96887	7,96889	12,03111	9,99998	28
33	7,98223	7,98225	12,01775	9,99998	27
34	7,99520	7,99522	12,00478	9,99998	26
35	8,00779	8,00781	11,99219	9,99998	25
36	8,02002	8,02004	11,97996	9,99998	24
37	8,03192	8,03194	11,96806	9,99997	23
38	8,04350	8,04353	11,95647	9,99997	22
39	8,05478	8,05481	11,94519	9,99997	21
40	8,06578	8,06581	11,93419	9,99997	20
41	8,07650	8,07653	11,92347	9,99997	19
42	8,08696	8,08700	11,91300	9,99997	18
43	8,09718	8,09722	11,90278	9,99997	17
44	8,10717	8,10720	11,89280	9,99996	16
45	8,11693	8,11696	11,88304	9,99996	15
46	8,12647	8,12651	11,87349	9,99996	14
47	8,13581	8,13585	11,86415	9,99996	13
48	8,14495	8,14500	11,85500	9,99996	12
49	8,15391	8,15395	11,84605	9,99996	11
50	8,16268	8,16273	11,83727	9,99995	10
51	8,17128	8,17133	11,82867	9,99995	9
52	8,17971	8,17976	11,82024	9,99995	8
53	8,18798	8,18804	11,81196	9,99995	7
54	8,19610	8,19616	11,80384	9,99995	6
55	8,20407	8,20413	11,79587	9,99994	5
56	8,21189	8,21195	11,78805	9,99994	4
57	8,21958	8,21964	11,78036	9,99994	3
58	8,22713	8,22720	11,77280	9,99994	2
59	8,23456	8,23462	11,76538	9,99994	1
60	8,24186	8,24192	11,75808	9,99893	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

89 Grad.

1 Grad.

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	8,24186	8,24192	11,75808	9,99993	60
1	8,24903	8,24910	11,75090	9,99993	59
2	8,25609	8,25616	11,74384	9,99993	58
3	8,26304	8,26312	11,73688	9,99993	57
4	8,26988	8,26996	11,73004	9,99992	56
5	8,27661	8,27669	11,72331	9,99992	55
6	8,28324	8,28332	11,71668	9,99992	54
7	8,28977	8,28986	11,71014	9,99992	53
8	8,29621	8,29629	11,70371	9,99992	52
9	8,30255	8,30263	11,69737	9,99991	51
10	8,30879	8,30888	11,69112	9,99991	50
11	8,31495	8,31505	11,68495	9,99991	49
12	8,32103	8,32112	11,67888	9,99990	48
13	8,32702	8,32711	11,67289	9,99990	47
14	8,33292	8,33302	11,66698	9,99990	46
15	8,33875	8,33886	11,66114	9,99990	45
16	8,34450	8,34461	11,65539	9,99989	44
17	8,35018	8,35029	11,64971	9,99989	43
18	8,35578	8,35590	11,64410	9,99989	42
19	8,36131	8,36143	11,63857	9,99989	41
20	8,36678	8,36689	11,63311	9,99988	40
21	8 37217	8,37229	11,62771	9,99988	39
22	8,37750	8,37762	11,62238	9,99988	38
23	8,38276	8,38289	11,61711	9,99987	37
24	8,38796	8 38809	11,61191	9,99987	36
25	8,39310	8,39323	11,60677	9,99987	35
26	8,39818	8,39832	11,60168	9,99986	34
27	8,40320	8,40334	11,59666	9,99986	33
28	8,40816	8,40830	11,59170	9,99986	32
29	8,41307	8,41321	11,58679	9,99985	31
30	8,41792	8,41807	11,58193	9,99985	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

88 Grad.

1°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	8,41792	8,41807	11,58193	9,99985	30
31	8,42272	8,42287	11,57713	9,99985	29
32	8,42746	8,42762	11,57238	9,99984	28
33	8,43216	8,43232	11,56768	9,99984	27
34	8,43680	8,43696	11,56304	9,99984	26
35	8,44139	8,44156	11,55844	9,99983	25
36	8,44594	8,44611	11,55389	9,99983	24
37	8,45044	8,45061	11,54939	9,99983	23
38	8,45489	8,45507	11,54493	9,99982	22
39	8,45930	8,45948	11,54052	9,99982	21
40	8,46366	8,46385	11,53615	9,99982	20
41	8,46799	8,46817	11,53183	9,99981	19
42	8,47226	8,47245	11,52755	9,99981	18
43	8,47650	8,47669	11,52331	9,99981	17
44	8,48069	8,48089	11,51911	9,99980	16
45	8,48485	8,48505	11,51495	9,99980	15
46	8,48896	8,48917	11,51083	9,99979	14
47	8,49304	8,49325	11,50675	9,99979	13
48	8,49708	8,49729	11,50271	9,99979	12
49	8,50108	8,50130	11,49870	9,99978	11
50	8,50504	8,50527	11,49473	9,99978	10
51	8,50897	8,50920	11,49080	9,99977	9
52	8,51287	8,51310	11,48690	9,99977	8
53	8,51673	8,51696	11,48304	9,99977	7
54	8,52055	8,52079	11,47921	9,99976	6
55	8,52434	8,52459	11,47541	9,99976	5
56	8,52810	8,52835	11,47165	9,99975	4
57	8,53183	8,53208	11,46792	9,99975	3
58	8,53552	8,53578	11,46422	9,99974	2
59	8,53919	8,53945	11,46055	9,99974	1
60	8,54282	8,54308	11,45692	9,99974	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

88°

2°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	8,54282	8,54308	11,45692	9,99974	60
1	8,54642	8,54669	11,45331	9,99973	59
2	8,54999	8,55027	11,44973	9,99973	58
3	8,55354	8,55382	11,44618	9,99972	57
4	8,55705	8,55734	11,44266	9,99972	56
5	8,56054	8,56083	11,43917	9,99971	55
6	8,56400	8,56429	11,43571	9,99971	54
7	8,56743	8,56773	11,43227	9,99970	53
8	8,57084	8,57114	11,42886	9,99970	52
9	8,57421	8,57452	11,42548	9,99969	51
10	8,57757	8,57788	11,42212	9,99969	50
11	8,58089	8,58121	11,41879	9,99968	49
12	8,58419	8,58451	11,41549	9,99968	48
13	8,58747	8,58779	11,41221	9,99967	47
14	8,59072	8,59105	11,40895	9,99967	46
15	8,59395	8,59428	11,40572	9,99967	45
16	8,59715	8,59749	11,40251	9,99966	44
17	8 60033	8,60068	11,39932	9,99966	43
18	8 60349	8,60384	11,39616	9,99965	42
19	8,60662	8,60698	11,39302	9,99964	41
20	8,60973	8,61009	11,38991	9,99964	40
21	8,61282	8,61319	11,38681	9,99963	39
22	8,61589	8,61626	11,38374	9,99963	38
23	8,61894	8,61931	11,38069	9,99962	37
24	8,62196	8,62234	11,37766	9,99962	36
25	8,62497	8,62535	11,37465	9,99961	35
26	8,62795	8,62834	11,37166	9,99961	34
27	8,63091	8,63131	11,36869	9,99960	33
28	8,63385	8,63426	11,36574	9,99960	32
29	8,63678	8,63718	11,36282	9,99959	31
30	8,63968	8,64009	11,35991	9,99959	30
Min.	Coseno	Cotg.	Tang,	Seno	Min.

87°

2°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	8,63968	8,64009	11,35991	9,99959	30
31	8,64256	8,64298	11,35702	9.99958	29
32	8 64543	8,64585	11,35415	9,99958	28
33	8,64827	8,64870	11,35130	9,99957	27
34	8,65110	8,65154	11,34846	9,99956	26
35	8,65391	8,65435	11,34565	9,99956	25
36	8,65670	8,65715	11,34285	9,99955	24
37	8,65947	8,65993	11,34007	9,99955	23
38	8,66223	8,66269	11,33731	9,99954	22
39	8,66497	8,66543	11,33457	9,99954	21
40	8,66769	8,66816	11,33184	9,99953	20
41	8,67039	8,67087	11,32913	9,99952	19
42	8,67308	8,67356	11 32644	9,99952	18
43	8,67575	8,67624	11,32376	9,99951	17
44	8,67841	8,67890	11,32110	9,99951	16
45	8,68104	8,68154	11,31846	9,99950	15
46	8,68367	8,68417	11,31583	9,99949	14
47	8,68627	8,68678	11,31322	9,99949	13
48	8,68886	8,68938	11,31062	9,99948	12
49	8,69144	8,69196	11,30804	9,99948	11
50	8,69400	8,69453	11,30547	9,99947	10
51	8,69654	8,69708	11,30292	9,99946	9
52	8,69907	8,69962	11,30038	9,99946	8
53	8,70159	8,70214	11,29786	9,99945	7
54	8,70409	8 70465	11,29535	9,99944	6
55	8,70658	8,70714	11,29286	9,99944	5
56	8,70905	8,70962	11,29038	9,99943	4
57	8,71151	8,71208	11,28792	9,99942	3
58	8,71395	8,71453	11,28547	9,99942	2
59	8,71638	8,71697	11,28303	9.99941	1
60	8,71880	8,71940	11,28060	9,99940	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

87°

3°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	8,71880	8,71940	11,28060	9,99940	60
1	8,72120	8,72181	11,27819	9,99940	59
2	8,72359	8,72420	11,27580	9,99939	58
3	8,72597	8,72659	11,27341	9,99938	57
4	8,72834	8,72896	11,27104	9 99938	56
5	8,73069	8,73132	11,26868	9,99937	55
6	8,73303	8,73366	11,26634	9,99936	54
7	8,73535	8,73600	11,26400	9,99936	53
8	8,73767	8,73832	11 26168	9,99935	52
9	8,73997	8,74063	11,25937	9,99934	51
10	8,74226	8,74292	11,25708	9,99934	50
11	8,74454	8,74521	11 25479	9,99933	49
12	8,74680	8,74748	11,25252	9,99932	48
13	8,74906	8,74974	11,25026	9,99932	47
14	8,75130	8,75199	11,24801	9,99931	46
15	8,75353	8,75423	11,24577	9,99930	45
16	8,75575	8,75645	11,24355	9,99929	44
17	8,75795	8,75867	11,24133	9,99929	43
18	8,76015	8,76087	11,23913	9,99928	42
19	8,76234	8,76306	11,23694	9,99927	41
20	8,76451	8,76525	11,23475	9 99926	40
21	8,76667	8,76742	11,23258	9,99926	39
22	8,76883	8,76958	11,23042	9,99925	38
23	8,77097	8,77173	11,22827	9,99924	37
24	8,77310	8,77387	11,22613	9,99923	36
25	8,77522	8,77600	11,22400	9,99923	35
26	8,77733	8,77811	11,22189	9,99922	34
27	8,77943	8,78022	11,21978	9,99921	33
28	8,78152	8,78232	11,21768	9,99920	32
29	8,78360	8,78441	11,21559	9,99920	31
30	8 78568	8,78649	11,21351	9 99919	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

86°

3°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	8,78568	8,78649	11,21351	9,99919	30
31	8,78774	8,78855	11,21145	9,99918	29
32	8 78979	8 79061	11,20939	9,99917	28
33	8 79183	8,79266	11,20734	9,99917	27
34	8 79336	8,79470	11,20530	9,99916	26
35	8 79588	8,79673	11,20327	9,99915	25
36	8,79789	8,79375	11,20125	9,99914	24
37	8,79990	8,80076	11,19924	9,99913	23
38	8,80189	8,80277	11,19723	9,99913	22
39	8.80388	8,80476	11,19524	9,99912	21
40	8,80585	8 80674	11,19326	9,99911	20
41	8 80782	8,80872	11,19128	9,99910	19
42	8,80978	8,81068	11,18932	9,99909	18
43	8,81173	8,81264	11,18736	9,99909	17
44	8,81367	8,81459	11,18541	9,99908	16
45	8,81560	8,81653	11,18347	9,99907	15
46	8,81752	8,81846	11,18154	9,99906	14
47	8,81944	8,82038	11,17962	9,99905	13
48	8,82134	8,82230	11,17770	9,99904	12
49	8,82324	8,82420	11,17580	9,99904	11
50	8,82513	8 82610	11,17390	9,99903	10
51	8,82701	8,82799	11,17201	9,99902	9
52	8,82888	8,82987	11,17013	9,99901	8
53	8,83075	8,83175	11,16825	9,99900	7
54	8,83261	8,83361	11,16639	9,99899	6
55	8,83446	8,83547	11,16453	9,99898	5
56	8,83630	8,83732	11,16268	9,99898	4
57	8,83813	8,83916	11,16084	9,99897	3
58	8,83996	8,84100	11,15900	9,99896	2
59	8,84177	8,84282	11,15718	9 99895	1
60	8,84358	8,84464	11,15536	9,99894	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

86°

4°

Min.	Seno.	Tang,	Cotg.	Coseno	Min
0	8,84358	8,84464	11,15536	9,99894	60
1	8,84539	8,84646	11,15354	9,99893	59
2	8,84718	8,84826	11,15174	9,99892	58
3	8,84897	8,85006	11,14994	9,99891	57
4	8,85075	8,85185	11,14815	9,99891	56
5	8,85252	8,85363	11,14637	9,99890	55
6	8,85429	8,85540	11,14460	9,99889	54
7	8,85605	8,85717	11,14283	9,99888	53
8	8,85780	8,85893	11,14107	9,99887	52
9	8,85955	8,86069	11,13931	9,99886	51
10	8,86128	8,86243	11,13757	9,99885	50
11	8,86301	8,86417	11,13583	9,99884	49
12	8,86474	8,86591	11,13409	9,99883	48
13	8,86645	8,86763	11,13237	9,99882	47
14	8,86816	8,86935	11,13065	9,99881	46
15	8,86987	8,87106	11,12894	9,99880	45
16	8,87156	8,87277	11,12723	9,99879	44
17	8,87325	8,87447	11,12553	9,99879	43
18	8,87494	8,87616	11,12384	9,99878	42
19	8,87661	8,87785	11,12215	9,99877	41
20	8,87829	8,87953	11,12047	9,99876	40
21	8,87995	8,88120	11,11880	9,99875	39
22	8,88161	8,88287	11,11713	9,99874	38
23	8,88326	8,88453	11,11547	9,99873	37
24	8,88490	8,88618	11,11382	9,99872	36
25	8,88654	8,88783	11,11217	9,99871	35
26	8,88817	8,88948	11,11052	9,99870	34
27	8,88980	8,89111	11,10889	9,99869	33
28	8,89142	8,89274	11,10726	9,99868	32
29	8,89304	8,89437	11,10563	9,99867	31
30	8,89464	8,89593	11,10402	9,99866	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

85°

4°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	8,89464	8,89593	11,10402	9,99866	30
31	8,89625	8,89760	11,10240	9,99865	29
32	8,89784	8,89920	11,10080	9,99864	28
33	8,89943	8,90080	11,09920	9,99863	27
34	8,90102	8,90240	11,09760	9,99862	26
35	8,90260	8,90399	11,09601	9,99861	25
36	8,90417	8,90557	11,09443	9,99860	24
37	8,90574	8,90715	11,09285	9,99859	23
38	8,90730	8,90872	11,09128	9,99858	22
39	8,90885	8,91029	11,08971	9,99857	21
40	8,91040	8,91185	11,08815	9,99856	20
41	8,91195	8,91340	11,08660	9,99855	19
42	8,91349	8,91495	11,08505	9,99854	18
43	8,91502	8,91650	11,08350	9,99853	17
44	8,91655	8,91803	11,08197	9,99852	16
45	8,91807	8,91957	11,08043	9,99851	15
46	8,91959	8,92110	11,07890	9,99850	14
47	8,92110	8,92262	11,07738	9,99848	13
48	8,92261	8,92414	11,07586	9,99847	12
49	8,92411	8,92565	11,07435	9,99846	11
50	8,92561	8,92716	11,07284	9,99845	10
51	8,92710	8,92866	11,07134	9,99844	9
52	8,92859	8,93016	11,06984	9,99843	8
53	8,93007	8,93165	11,06835	9,99842	7
54	8,93154	8,93313	11,06687	9,99841	6
55	8,93301	8,93462	11,06538	9,99840	5
56	8,93448	8,93609	11,06391	9,99839	4
57	8,93594	8,93756	11,06244	9,99838	3
58	8,93740	8,93903	11,06097	9,99837	2
59	8,93885	8,94049	11,05951	9,99836	1
60	8,94030	8,94195	11,05805	9,99834	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

85°

5°

Min	Seno.	Tang.	Cotg.	Coseno	Min.
0	8,94030	8,94195	11,05805	9,99834	60
1	8,94174	8,94340	11,05660	9,99833	59
2	8,94317	8,94485	11,05515	9,99832	58
3	8,94461	8,94630	11,05370	9,99831	57
4	8 94603	8,94773	11,05227	9,99830	56
5	8,94746	8,94917	11,05083	9,99829	55
6	8,94887	8,95060	11,04940	9,99828	54
7	8,95029	8,95202	11,04798	9,99827	53
8	8,95170	8,95344	11,04656	9,99825	52
9	8,95310	8 95486	11,04514	9,99824	51
10	8,95450	8,95627	11,04373	9,99823	50
11	8,95589	8,95767	11,04233	9,99822	49
12	8,95728	8,95908	11,04092	9,99821	48
13	8 95867	8,96047	11,03953	9,99820	47
14	8,96005	8,96187	11,03813	9,99819	46
15	8,96143	8,96325	11,03675	9,99817	45
16	8,96280	8,96464	11,03536	9,99816	44
17	8,96417	8,96602	11,03393	9,99815	43
18	8,96553	8,96739	11,03261	9,99814	42
19	8,96689	8,96877	11,03123	9,99813	41
20	8,96825	8,97013	11,02987	9,99812	40
21	8,96960	8,97150	11,02850	9,99810	39
22	8,97095	8,97285	11,02715	9,99809	38
23	8,97229	8,97421	11,02579	9,99808	37
24	8,97363	8,97556	11,02444	9,99807	36
25	8,97496	8,97691	11 02309	9 99806	35
26	8,97629	8,97825	11,02175	9,99804	34
27	8,97762	8,97959	11,02041	9,99803	33
28	8,97894	8,98092	11,01908	9,99802	32
29	8,98026	8,98225	11,01775	9,99801	31
30	8,98157	8,98358	11,01642	9,99800	30
Min.	Coseno	Cotg.	Tang.	Seno	Min.

84°

5°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	8,98157	8,98358	11,01642	9,99800	30
31	8,98288	8,98490	11,01510	9,99793	29
32	8,98419	8,98622	11,01378	9,99797	28
33	8,98549	8,98753	11,01247	9,99796	27
34	8,98679	8,98884	11,01116	9,99795	26
35	8,98808	8,99015	11,00985	9,99793	25
36	8,98937	8,99145	11,00855	9,99792	24
37	8,99066	8,99275	11,00725	9,99791	23
38	8,99194	8,99405	11,00595	9,99790	22
39	8,99322	8,99534	11,00466	9,99788	21
40	8,99450	8,99662	11,00338	9,99787	20
41	8,99577	8,99791	11,00209	9,99786	19
42	8,99704	8,99919	11,00081	9,99785	18
43	8,99830	9,00046	10,99954	9,99783	17
44	8,99956	9,00174	10,99826	9,99782	16
45	9,00082	9,00301	10,99699	9,99781	15
46	9,00207	9,00427	10,99573	9,99780	14
47	9,00332	9,00553	10,99447	9,99778	13
48	9,00456	9,00679	10,99321	9,99777	12
49	9,00581	9,00805	10,99195	9,99776	11
50	9,00704	9,00930	10,99070	9,99775	10
51	9,00828	9,01055	10,98945	9,99773	9
52	9,00951	9,01179	10,98821	9,99772	8
53	9,01074	9,01303	10,98697	9,99771	7
54	9,01196	9,01427	10,98573	9,99769	6
55	9,01318	9,01550	10,98450	9,99768	5
56	9,01440	9,01673	10,98327	9,99767	4
57	9,01561	9,01796	10,98204	9,99765	3
58	9,01682	9,01918	10,98082	9,99764	2
59	9,01803	9,02040	10,97960	9,99763	1
60	9,01923	9,02162	10,97838	9,99761	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

84°

6°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,01923	9,02162	10,97838	9,99761	60
1	9,02043	9,02283	10,97717	9,99760	59
2	9,02163	9,02404	10,97596	9,99759	58
3	9,02283	9,02525	10,97475	9,99757	57
4	9,02402	9,02645	10,97355	9,99756	56
5	9,02520	9,02766	10,97234	9,99755	55
6	9,02639	9,02885	10,97115	9,99753	54
7	9,02757	9,03005	10,96995	9,99752	53
8	9,02874	9,03124	10,96876	9,99751	52
9	9,02992	9,03242	10,96758	9,99749	51
10	9,03109	9,03361	10,96639	9,99748	50
11	9,03226	9,03479	10,96521	9,99747	49
12	9,03342	9,03597	10,96403	9,99745	48
13	9,03458	9,03714	10,96286	9,99744	47
14	9,03574	9,03832	10,96168	9,99742	46
15	9,03690	9,03948	10,96052	9,99741	45
16	9,03805	9,04065	10,95935	9,99740	44
17	9,03920	9,04181	10,95819	9,99738	43
18	9,04034	9,04297	10,95703	9,99737	42
19	9,04149	9,04413	10,95587	9,99736	41
20	9,04262	9,04528	10,95472	9,99734	40
21	9,04376	9,04643	10,95357	9,99733	39
22	9,04490	9,04758	10,95242	9,99731	38
23	9,04603	9,04873	10,95127	9,99730	37
24	9,04715	9,04987	10,95013	9,99728	36
25	9,04828	9,05101	10,94899	9,99727	35
26	9,04940	9,05214	10,94786	9,99726	34
27	9,05052	9,05328	10,94672	9,99724	33
28	9,05164	9,05441	10,94559	9,99723	32
29	9,05275	9,05553	10,94447	9,99721	31
30	9,05386	9,05666	10,94334	9,99720	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

83°

6°

Min.	Seno.	Tang.	Cotg,	Coseno	Min,
30	9,05386	9,05668	10,94334	9,99720	30
31	9,05497	9,05778	10,94222	9,99718	29
32	9,05607	9,05890	10,94110	9,99717	28
33	9,05717	9,06002	10,93998	9,99716	27
34	9,05827	9,06113	10,93887	9,99714	26
35	9,05937	9,06224	10,93776	9,99713	25
36	9,06046	9,06335	10,93665	9,99711	24
37	9,06155	9,06445	10,93555	9,99710	23
38	9,06264	9,06556	10,93444	9,99708	22
39	9,06372	9,06666	10,93334	9,99707	21
40	9,06481	9,06775	10,93225	9,99705	20
41	9,06589	9,06885	10,93115	9,99704	19
42	9,06696	9,06994	10,93006	9,99702	18
43	9,06804	9,07103	10,92897	9,99701	17
44	9,06911	9,07211	10,92789	9,99699	16
45	9,07018	9,07320	10,92680	9,99698	15
46	9,07124	9,07428	10,92572	9,99696	14
47	9,07231	9,07536	10,92464	9,99695	13
48	9,07337	9,07643	10,92357	9,99693	12
49	9,07442	9,07751	10,92249	9,99692	11
50	9,07548	9,07858	10,92142	9,99690	10
51	9,07653	9,07964	10,92036	9,99689	9
52	9,07758	9,08071	10,91929	9,99687	8
53	9,07863	9,08177	10,91823	9,99686	7
54	9,07968	9,08283	10,91717	9,99684	6
55	9,08072	9,08389	10,91611	9,99683	5
56	9,08176	9,08495	10,91505	9,99681	4
57	9,08280	9,08600	10,91400	9,99680	3
58	9,08383	9,08705	10,91295	9,99678	2
59	9,08486	9,08810	10,91190	9,99677	1
60	9,08589	9,08914	10,91086	9,99675	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

83°

7°

Min.	Seno.	Tang.	Cotg.	Coseno	Min
0	9,08589	9,08914	10,91086	9,99675	60
1	9,08692	9,09019	10,90981	9,99674	59
2	9,08795	9,09123	10,90877	9,99672	58
3	9,08897	9,09227	10,90773	9,99670	57
4	9,08999	9,09330	10,90670	9,99669	56
5	9,09101	9,09434	10,90566	9,99667	55
6	9,09202	9,09537	10,90463	9,99666	54
7	9,09304	9,09640	10,90360	9,99664	53
8	9,09405	9,09742	10,90258	9,99663	52
9	9,09506	9,09845	10,90155	9,99661	51
10	9,09606	9,09947	10,90053	9,99659	50
11	9,09707	9,10049	10,89951	9,99658	49
12	9,09807	9,10150	10,89850	9,99656	48
13	9,09907	9,10252	10,89748	9,99655	47
14	9,10006	9,10353	10,89647	9,99653	46
15	9,10106	9,10454	10,89546	9,99651	45
16	9,10205	9,10555	10,89445	9,99650	44
17	9,10304	9,10656	10,89344	9,99648	43
18	9,10402	9,10756	10,89244	9,99647	42
19	9,10501	9,10856	10,89144	9,99645	41
20	9,10599	9,10956	10,89044	9,99643	40
21	9,10697	9,11056	10,88944	9,99642	39
22	9,10795	9,11155	10,88845	9,99640	38
23	9,10893	9,11254	10,88746	9,99638	37
24	9,10990	9,11353	10,88647	9,99637	36
25	9,11087	9,11452	10,88548	9,99635	35
26	9,11184	9,11551	10,88449	9,99633	34
27	9,11281	9,11649	10,88351	9,99632	33
28	9,11377	9,11747	10,88253	9,99630	32
29	9,11474	9,11845	10,88155	9,99629	31
30	9,11570	9,11943	10,88057	9,99627	30
Min.	Coseno	Cotg.	Tang,	Seno	Min.

82°

7°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,11570	9,11943	10,88057	9,99627	30
31	9,11666	9,12040	10,87960	9,99625	29
32	9,11761	9,12138	10,87862	9,99624	28
33	9,11857	9,12235	10,87765	9,99622	27
34	9,11952	9,12332	10,87668	9,99620	26
35	9,12047	9,12428	10,87572	9,99618	25
36	9,12142	9,12525	10,87475	9,99617	24
37	9,12236	9,12621	10,87379	9,99615	23
38	9,12331	9,12717	10,87283	9,99613	22
39	9,12425	9,12813	10,87187	9,99612	21
40	9,12519	9,12909	10,87091	9,99610	20
41	9,12612	9,13004	10,86996	9,99608	19
42	9,12706	9,13099	10,86901	9,99607	18
43	9,12799	9,13194	10,86806	9,99605	17
44	9,12892	9,13289	10,86711	9,99603	16
45	9,12985	9,13384	10,86616	9,99601	15
46	9,13078	9,13478	10,86522	9,99600	14
47	9,13171	9,13573	10,86427	9,99598	13
48	9,13263	9,13667	10,86333	9,99596	12
49	9,13355	9,13761	10,86239	9,99595	11
50	9,13447	9,13854	10,86146	9,99593	10
51	9,13539	9,13948	10,86052	9,99591	9
52	9,13630	9,14041	10,85959	9,99589	8
53	9,13722	9,14134	10,85866	9,99588	7
54	9,13813	9,14227	10,85773	9,99586	6
55	9,13904	9,14320	10,85680	9,99584	5
56	9,13994	9,14412	10,85588	9,99582	4
57	9,14085	9,14504	10,85496	9,99581	3
58	9,14175	9,14597	10,85403	9,99579	2
59	9,14266	9,14688	10,85312	9,99577	1
60	9,14356	9,14780	10,85220	9,99575	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

82°

8°

Min	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,14356	9,14780	10,85220	9,99575	60
1	9,14445	9,14872	10,85128	9,99574	59
2	9,14535	9,14963	10,85037	9,99572	58
3	9,14624	9,15054	10,84946	9,99570	57
4	9 14714	9,15145	10,84855	9,99568	56
5	9,14803	9,15236	10,84764	9,99566	55
6	9,14891	9,15327	10,84673	9,99565	54
7	9,14980	9,15417	10,84583	9,99563	53
8	9,15069	9,15508	10,84492	9,99561	52
9	9,15157	9,15598	10,84402	9,99559	51
10	9,15245	9,15688	10,84312	9,99557	50
11	9,15333	9,15777	10,84223	9,99556	49
12	9,15421	9,15867	10,84133	9,99554	48
13	9 15508	9,15956	10,84044	9,99552	47
14	9,15596	9,16046	10,83954	9,99550	46
15	9,15683	9,16135	10,83865	9,99548	45
16	9,15770	9,16224	10,83776	9,99546	44
17	9,15857	9,16312	10,83688	9,99545	43
18	9,15944	9,16401	10,83599	9,99543	42
19	9,16030	9,16489	10,83511	9,99541	41
20	9,16116	9,16577	10,83423	9,99539	40
21	9,16203	9,16665	10,83335	9,99537	39
22	9,16289	9,16753	10,83247	9,99535	38
23	9,16374	9,16841	10,83159	9,99533	37
24	9,16460	9,16928	10,83072	9,99532	36
25	9,16545	9,17016	10,82984	9,99530	35
26	9,16631	9,17103	10,82897	9,99528	34
27	9,16716	9,17190	10,82810	9,99526	33
28	9,16801	9,17277	10,82723	9,99524	32
29	9,16886	9,17363	10,82637	9,99522	31
30	9,16970	9,17450	10,82550	9,99520	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

81°

8°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,16970	9,17450	10,82550	9,99520	30
31	9,17055	9,17536	10,82464	9,99518	29
32	9,17139	9,17622	10,82378	9,99517	28
33	9,17223	9,17708	10,82292	9,99515	27
34	9,17307	9,17794	10,82206	9,99513	26
35	9,17391	9,17880	10,82120	9,99511	25
36	9,17474	9,17965	10,82035	9,99509	24
37	9,17558	9,18051	10,81949	9,99507	23
38	9 17641	9,18136	10,81864	9,99505	22
39	9,17724	9,18221	10,81779	9,99503	21
40	9,17807	9,18306	10,81694	9,99501	20
41	9,17890	9,18391	10,81609	9,99499	19
42	9,17973	9,18475	10,81525	9,99497	18
43	9,18055	9,18560	10,81440	9 99495	17
44	9,18137	9,18644	10,81356	9,99494	16
45	9,18220	9,18728	10,81272	9,99192	15
46	9,18302	9,18812	10,81188	9,99490	14
47	9,18383	9,18896	10,81104	9,99488	13
48	9,18465	9 18979	10 81021	9,99486	12
49	9,18547	9,19063	10,80937	9,99484	11
50	9,18628	9,19146	10,80854	9,99482	10
51	9,18709	9,19229	10,80771	9,99480	9
52	9,18790	9,19312	10,80688	9,99478	8
53	9,18871	9,19395	10,80605	9,99476	7
54	9,18952	9,19478	10,80522	9,99474	6
55	9,19033	9,19561	10,80439	9,99472	5
56	9,19113	9,19643	10,80357	9,99470	4
57	9,19193	9,19725	10,80275	9,99468	3
58	9,19273	9,19807	10,80193	9,99466	2
59	9,19353	9,19889	10,80111	9,99464	1
60	9,19433	9,19971	10,80029	9,99462	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

81°

9°

Min.	Seno.	Tang,	Cotg.	Coseno	Min.
0	9,19433	9,19971	10,80029	9,99462	60
1	9,19513	9,20053	10,79947	9,99460	59
2	9,19592	9,20134	10,79866	9,99458	58
3	9,19672	9,20216	10,79784	9,99456	57
4	9,19751	9,20297	10,79703	9,99454	56
5	9,19830	9,20378	10,79622	9,99452	55
6	9,19909	9,20459	10,79541	9,99450	54
7	9,19988	9,20540	10,79460	9,99448	53
8	9,20067	9,20621	10,79379	9,99446	52
9	9,20145	9,20701	10,79299	9,99444	51
10	9,20223	9,20782	10,79218	9,99442	50
11	9,20302	9,20862	10,79138	9,99440	49
12	9,20380	9,20942	10,79058	9,99438	48
13	9,20458	9,21022	10,78978	9,99436	47
14	9,20535	9,21102	10,78893	9,99434	46
15	9,20613	9,21182	10,78818	9,99432	45
16	9,20691	9,21261	10,78739	9,99429	44
17	9,20768	9,21341	10,78659	9,99427	43
18	9,20845	9,21420	10,78580	9,99425	42
19	9,20922	9,21499	10,78501	9,99423	41
20	9,20999	9,21578	10,78422	9,99421	40
21	9,21076	9,21657	10,78343	9,99419	39
22	9,21153	9,21736	10,78264	9,99417	38
23	9,21229	9,21814	10,78186	9,99415	37
24	9,21306	9,21893	10,78107	9,99413	36
25	9,21382	9,21971	10,78029	9,99411	35
26	9,21458	9,22049	10,77951	9,99409	34
27	9,21534	9,22127	10,77873	9,99407	33
28	9,21610	9,22205	10,77795	9,99404	32
29	9,21685	9,22283	10,77717	9,99402	31
30	9,21761	9,22361	10,77639	9,99400	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

80°

9°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,21761	9,22361	10,77639	9,99400	30
31	9,21836	9,22438	10,77562	9.99398	29
32	9 21912	9,22516	10,77484	9,99396	28
33	9,21987	9,22593	10,77407	9,99394	27
34	9,22062	9,22670.	10,77330	9,99392	26
35	9,22137	9,22747	10,77253	9,99390	25
36	9,22211	9,22824	10,77176	9,99383	24
37	9,22286	9,22901	10,77099	9,99385	23
38	9,22361	9,22977	10,77023	9,99383	22
39	9 22435	9,23054	10,76946	9,99381	21
40	9,22509	9,23130	10,76870	9,99379	20
41	9,22583	9,23206	10,76794	9,99377	19
42	9,22657	9,23283	10 76717	9,99375	18
43	9,22731	9,23359	10,76641	9,99372	17
44	9,22805	9,23435	10,76565	9,99370	16
45	9 22878	9,23510	10,76490	9,99368	15
46	9,22952	9,23586	10,76414	9,99366	14
47	9,23025	9,23661	10,76339	9,99364	13
48	9.23098	9,23737	10,76263	9,99362	12
49	9,23171	9,23812	10,76188	9,99359	11
50	9,23244	9,23887	10,76113	9,99357	10
51	9,23317	9,23962	10,76038	9,99355	9
52	9,23390	9,24037	10,75963	9,99353	8
53	9,23462	9,24112	10,75888	9,99351	7
54	9,23535	9,24186	10,75814	9,99348	6
55	9,23607	9,24261	10,75739	9,99346	5
56	9,23679	9,24335	10,75665	9,99344	4
57	9,23752	9,24410	10,75590	9,99342	3
58	9,23823	9,24484	10,75516	9,99340	2
59	9,23895	9,24558	10,75442	9,99337	1
60	9,23967	9,24632	10,75368	9,99335	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

80°

10°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,23967	9,24632	10,75368	9,99335	60
1	9,24039	9,24706	10,75294	9,99333	59
2	9,24110	9,24779	10,75221	9,99331	58
3	9,24181	9,24853	10,75147	9,99328	57
4	9,24253	9,24926	10,75074	9 99326	56
5	9,24324	9,25000	10,75000	9,99324	55
6	9,24395	9,25073	10,74927	9,99322	54
7	9,24466	9,25146	10,74854	9,99319	53
8	9,24536	9,25219	10 74781	9,99317	52
9	9,24607	9,25292	10,74708	9,99315	51
10	9,24677	9,25365	10,74635	9,99313	50
11	9,24748	9,25437	10 74563	9·99310	49
12	9,24818	9,25510	10,74490	9,99308	48
13	9,24888	9,25582	10,74418	9,99306	47
14	9,24958	9,25655	10 74345	9,99304	46
15	9,25028	9,25727	10,74273	9,99301	45
16	9,25098	9,25799	10,74201	9,99299	44
17	9,25168	9,25871	10,74129	9,99297	43
18	9,25237	9,25943	10,74057	9,99294	42
19	9,25307	9,26015	10,73985	9,99292	41
20	9,25376	9,26086	10,73914	9 99290	40
21	9,25445	9,26158	10,73842	9,99288	39
22	9,25514	9,26229	10,73771	9,99285	38
23	9,25583	9,26301	10,73699	9,99283	37
24	9,25652	9,26372	10,73628	9,99281	36
25	9,25721	9,26443	10,73557	9,99278	35
26	9,25790	9,26514	10,73486	9,99276	34
27	9,25858	9,26585	10,73415	9,99274	33
28	9,25927	9,26655	10,73345	9,99271	32
29	9,25995	9,26726	10,73274	9,99269	31
30	9,26063	9,26797	10,73203	9,99267	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

10°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,26063	9,26797	10,73203	9,99267	30
31	9,26131	9,26867	10,73133	9,99264	29
32	9,26199	9,26937	10,73063	9,99262	28
33	9,26267	9,27008	10,72992	9,99260	27
34	9,26335	9,27078	10,72922	9,99257	26
35	9 26403	9,27148	10,72852	9,99255	25
36	9,26470	9,27218	10,72782	9,99252	24
37	9,26538	6,27288	10,72712	9,99250	23
38	9,26605	9,27357	10,72643	9,99248	22
39	9,26672	9,27427	10,72573	9,99245	21
40	9,26739	9 27496	10,72504	9,99243	20
41	9 26806	9,27566	10,72434	9,99241	19
42	9,26873	9,27635	10,72365	9,99238	18
43	9,26940	9,27704	10,72296	9,99236	17
44	9,27007	9,27773	10,72227	9,99233	16
45	9,27073	9,27842	10,72158	9,99231	15
46	9,27140	9,27911	10,72089	9,99229	14
47	9,27206	9,27980	10,72020	9,99226	13
48	9 27273	9,28049	10,71951	9,99224	12
49	9,27339	9,28117	10,71883	9,99221	11
50	9,27405	9 28186	10,71814	9,99219	10
51	9,27471	9,28254	10,71746	9,99217	9
52	9,27537	9,28323	10,71677	9,99214	8
53	9,27602	9,28391	10,71609	9,99212	7
54	9,27668	9,28459	10,71541	9,99209	6
55	9,27734	9,28527	10,71473	9,99207	5
56	9,27799	9,28595	10,71405	9,99204	4
57	9,27864	9,28662	10,71338	9,99202	3
58	9,27930	9,28730	10,71270	9,99200	2
59	9,27995	9,28798	10,71202	9 99197	1
60	9,28060	9,28865	10,71135	9,99195	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

79°

11°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,28060	9,28865	10,71135	9,99195	60
1	9,28125	9,28933	10,71067	9,99192	59
2	9,28190	9,29000	10,71000	9,99190	58
3	9,28254	9,29067	10,70933	9,99187	57
4	9,28319	9,29134	10,70866	9,99185	56
5	9,28384	9,29201	10,70799	9,99182	55
6	9,28448	9,29268	10,70732	9,99180	54
7	9,28512	9,29335	10,70665	9,99177	53
8	9,28577	9,29402	10,70598	9,99175	52
9	9,28641	9,29468	10,70532	9,99172	51
10	9,28705	9,29535	10,70465	9,99170	50
11	9,28769	9,29601	10,70399	9,99167	49
12	9,28833	9,29668	10,70332	9,99165	48
13	9,28896	9,29734	10,70266	9,99162	47
14	9,28960	9,29800	10,70200	9,99160	46
15	9,29024	9,29866	10,70134	9,99157	45
16	9,29087	9,29932	10,70068	9,99155	44
17	9,29150	9,29998	10,70002	9,99152	43
18	9,29214	9,30064	10,69936	9,99150	42
19	9,29277	9,30130	10,69870	9,99147	41
20	9,29340	9,30195	10,69805	9,99145	40
21	9,29403	9,30261	10,69739	9,99142	39
22	9,29466	9,30326	10,69674	9,99140	38
23	9,29529	9,30391	10,69609	9,99137	37
24	9,29591	9,30457	10,69543	9,99135	36
25	9,29654	9,30522	10,69478	9,99132	35
26	9,29716	9,30587	10,69413	9,99130	34
27	9,29779	9,30652	10,69348	9,99127	33
28	9,29841	9,30717	10,69283	9,99124	32
29	9,29903	9,30782	10,69218	9,99122	31
30	9,29966	9,30846	10,69154	9,99119	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

78°

11°

Min.	Seno.	Tang.	Cotg.	Coseno	Min
30	9,29966	9,30846	10,69154	9,99119	30
31	9,30028	9,30911	10,69089	9,99117	29
32	9,30090	9,30975	10,69025	9,99114	28
33	9,30151	9,31040	10,68960	9,99112	27
34	9,30213	9,31104	10,68896	9,99109	26
35	9,30275	9,31168	10,68832	9,99106	25
36	9,30336	9,31233	10,68767	9,99104	24
37	9,30398	9,31297	10,68703	9,99101	23
38	9,30459	9,31361	10,68639	9,99099	22
39	9,30521	9,31425	10,68575	9,99096	21
40	9,30582	9,31489	10,68511	9,99093	20
41	9,30643	9,31552	10,68448	9,99091	19
42	9,30704	9,31616	10,68384	9,99088	18
43	9,30765	9,31679	10,68321	9,99086	17
44	9,30826	9,31743	10,68257	9,99083	16
45	9,30887	9,31806	10,68194	9,99080	15
46	9,30947	9,31870	10,68130	9,99078	14
47	9,31008	9,31933	10,68067	9,99075	13
48	9,31068	9,31996	10,68004	9,99072	12
49	9,31129	9,32059	10,67941	9,99070	11
50	9,31189	9,32122	10,67878	9,99067	10
51	9,31250	9,32185	10,67815	9,99064	9
52	9,31310	9,32248	10,67752	9,99062	8
53	9,31370	9,32311	10,67689	9,99059	7
54	9,31430	9,32373	10,67627	9,99056	6
55	9,31490	9,32436	10,67564	9,99054	5
56	9,31549	9,32498	10,67502	9,99051	4
57	9,31609	9,32561	10,67439	9,99048	3
58	9,31669	9,32623	10,67377	9,99046	2
59	9,31728	9,32685	10,67315	9,99043	1
60	9,31788	9,32747	10,67253	9,99040	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

78°

12°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,31788	9,32747	10,67253	9,99040	60
1	9,31847	9,32810	10,67190	9,99038	59
2	9,31907	9,32872	10,67128	9,99035	58
3	9,31966	9,32933	10,67067	9,99032	57
4	9,32025	9,32995	10,67005	9,99030	56
5	9,32084	9,33057	10,66943	9,99027	55
6	9,32143	9,33119	10,66881	9,99024	54
7	9,32202	9,33180	10,66820	9,99022	53
8	9,32261	9,33242	10,66758	9,99019	52
9	9,32319	9,33303	10,66697	9,99016	51
10	9,32378	9,33365	10,66635	9,99013	50
11	9,32437	9,33426	10,66574	9,99011	49
12	9,32495	9,33487	10,66513	9,99008	48
13	9,32553	9,33548	10,66452	9,99005	47
14	9,32612	9,33609	10,66391	9,99002	46
15	9,32670	9,33670	10,66330	9,99000	45
16	9,32728	9,33731	10,66269	9,98997	44
17	9,32786	9,33792	10,66208	9,98994	43
18	9,32844	9,33853	10,66147	9,98991	42
19	9,32902	9,33913	10,66087	9,98989	41
20	9,32960	9,33974	10,66026	9,98986	40
21	9,33018	9,34034	10,65968	9,98983	39
22	9,33075	9,34095	10,65905	9,98980	38
23	9,33133	9,34155	10,65845	9,98978	37
24	9,33190	9,34215	10,65785	9,98975	36
25	9,33248	9,34276	10,65724	9,98972	35
26	9,33305	9,34336	10,65664	9,98969	34
27	9,33362	9,34396	10,65604	9,98967	33
28	9,33420	9,34456	10,65544	9,98964	32
29	9,33477	9,34516	10,65484	9,98961	31
30	9,33534	9,34576	10,65424	9,98958	30
Min.	Coseno	Cotg.	Tang,	Seno	Min.

77°

12°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,33534	9,34576	10,65424	9,98958	30
31	9,33591	9,34635	10,65365	9,98955	29
32	9,33647	9,34695	10,65305	9,98953	28
33	9,33704	9,34755	10,65245	9,98950	27
34	9,33761	9,34814	10,65186	9,98947	26
35	9,33818	9,34874	10,65126	9,98944	25
36	9,33874	9,34933	10,65067	9,98941	24
37	9,33931	9,34992	10,65008	9,98938	23
38	9,33987	9,35051	10,64949	9,98936	22
39	9,34043	9,35111	10,64889	9,98933	21
40	9,34100	9,35170	10,64830	9,98930	20
41	9,34156	9,35229	10,64771	9,98927	19
42	9,34212	9,35288	10,64712	9,98924	18
43	9,34268	9,35347	10,64653	9,98921	17
44	9,34324	9,35405	10,64595	9,98919	16
45	9,34380	9,35464	10,64536	9,98916	15
46	9,34436	9,35523	10,64477	9,98913	14
47	9,34491	9,35581	10,64419	9,98910	13
48	9,34547	9,35640	10,64360	9,98907	12
49	9,34602	9,35698	10,64302	9,98904	11
50	9,34658	9,35757	10,64243	9,98901	10
51	9,34713	9,35815	10,64185	9,98898	9
52	9,34769	9,35873	10,64127	9,98896	8
53	9,34824	9,35931	10,64069	9,98893	7
54	9,34879	9,35989	10,64011	9,98890	6
55	9,34934	9,36047	10,63953	9,98887	5
56	9,34989	9,36105	10,63895	9,98884	4
57	9,35044	9,36163	10,63837	9,98881	3
58	9,35099	9,36221	10,63779	9,98878	2
59	9,35154	9,36279	10,63721	9,98875	1
60	9,35209	9,36336	10,63664	9,98872	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

13°

Min.	Seno.	Tang,	Cotg.	Coseno	Min.
0	9,35209	9,36336	10,63664	9,98872	60
1	9,35263	9,36394	10,63606	9,98869	59
2	9,35318	9,36452	10,63548	9,98867	58
3	9,35373	9,36509	10,63491	9,98864	57
4	9,35427	9,36566	10,63434	9,98861	56
5	9,35481	9,36624	10,63376	9,98858	55
6	9,35536	9 36681	10,63319	9,98855	54
7	9,35590	9 36738	10,63262	9,98852	53
8	9,35644	9 36795	10,63205	9,98849	52
9	9,35698	9 36852	10,63148	9,98846	51
10	9,35752	9 36909	10,63091	9,98843	50
11	9,35806	9 36966	10,63034	9,98840	49
12	9,35860	9 37023	10,62977	9,98837	48
13	9,35914	9,37080	10,62920	9,98834	47
14	9,35968	9 37137	10 62863	9,98831	46
15	9,36022	9,37193	10,62807	9,98828	45
16	9,36075	9,37250	10 62750	9,98825	44
17	9,36129	9 37306	10,62694	9,98822	43
18	9,36182	9,37363	10,62637	9,98819	42
19	9,36236	9,37419	10,62581	9,98816	41
20	9,36289	9,37476	10,62524	9,98813	40
21	9,36342	9,37532	10 62468	9,98810	39
22	9,36395	9 37588	10,62412	9,98807	38
23	9,36449	9,37644	10,62356	9,98804	37
24	9,36502	9,37700	10,62300	9,98801	36
25	9,36555	9 37756	10,62244	9,98798	35
26	9,36608	9,37812	10,62188	9,98795	34
27	9,36660	9,37868	10,62132	9,98792	33
28	9,36713	9,37924	10,62076	9,98789	32
29	9,36766	9,37980	10,62020	9,98786	31
30	9,36819	9 38035	10,61965	9,98783	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

76°

13°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9·36819	9,38035	10 61965	9,98783	30
31	9,36871	9,38091	10,61909	9,98780	29
32	9,36924	9,38147	10,61853	9,98777	28
33	9,36976	9,38202	10,61798	9,98774	27
34	9,37028	9,38257	10,61743	9,98771	26
35	9,37081	9,38313	10,61687	9,98768	25
36	9,37133	9,38368	10,61632	9,98765	24
37	9,37185	9,38423	10,61577	9,98762	23
38	9 37237	9,38479	10,61521	9,98759	22
39	9 37289	9 38534	10,61466	9,98759	21
40	9,37341	9,38589	10,61411	9,98753	20
41	9,37393	9 38644	10,61356	9,98750	19
42	9,37445	9 38699	10,61301	9,98746	18
43	9,37497	9,38754	10,61246	9,98743	17
44	9,37549	9,38808	10,61192	9,98740	16
45	9,37600	9,38863	10,61137	9,98737	15
46	9,37652	9,38918	10,61082	9,98734	14
47	9 37703	9,38972	10,61028	9,98731	13
48	9,37755	9,39027	10,60973	9,98728	12
49	9 37806	9,39082	10,60918	9,98725	11
50	9,37858	9,39136	10,60864	9,98722	10
51	9,37909	9,39190	10,60810	9,98719	9
52	9,37960	9,39245	10,60755	9,98715	8
53	9,38011	9,39299	10,60701	9,98712	7
54	9 38062	9,39353	10,60647	9,98709	6
55	9,38113	9,39407	10,60593	9,98706	5
56	9,38164	9,39461	10,60539	9,98703	4
57	9,38215	9,39515	10,60485	9,98700	3
58	9,38266	9,39569	10,60431	9,98697	2
59	9,38317	9,39623	10,60377	9,98694	1
60	9,38368	9,39677	10,60323	9,98690	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

76°

14°

Min	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,38368	9,39677	10,60323	9,98690	60
1	9,38418	9,39731	10,60269	9,98687	59
2	9,38469	9,39785	10,60215	9,98684	58
3	9,38519	9,39838	10,60162	9,98681	57
4	9 38570	9,39892	10,60108	9,98678	56
5	9,38620	9,39945	10,60055	9 98675	55
6	9,38670	9,39999	10,60001	9,98671	54
7	9,38721	9,40052	10,59948	9,98668	53
8	9,38771	9,40106	10,59894	9,98665	52
9	9,38821	9,40159	10,59841	9,98662	51
10	9,38871	9,40212	10,59788	9,98659	50
11	9,38921	9,40266	10,59734	9,98656	49
12	9,38971	9,40319	10,59681	9,98652	48
13	9 39021	9,40372	10,59628	9,98649	47
14	9,39071	9,40425	10,59575	9,98646	46
15	9,39121	9,40478	10,59522	9,98643	45
16	9,39170	9,40531	10,59469	9,98640	44
17	9,39220	9,40584	10,59416	9,98636	43
18	9,39270	9,40636	10,59364	9,98633	42
19	9,39319	9,40689	10,59311	9,98630	41
20	9,39369	9,40742	10,59258	9,98627	40
21	9,39418	9,40795	10,59205	9,98623	39
22	9,39467	9,40847	10,59153	9,98620	38
23	9,39517	9,40900	10,59100	9,98617	37
24	9,39566	9,40952	10,59048	9,98614	36
25	9,39615	9,41005	10,58995	9,98610	35
26	9,39664	9,41057	10,58943	9,98607	34
27	9,39713	9,41109	10,58891	9,98604	33
28	9 39762	9,41161	10,58839	9,98601	32
29	9,39811	9,41214	10,58786	9,98597	31
30	9,39860	9,41266	10,58734	9,98594	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min

75°

14°

Min.	Seno.	Tang	Cotg,	Coseno	Min,
30	9,39860	9,41266	10,58734	9,98594	30
31	9,39909	9,41318	10,58682	9,98591	29
32	9,39958	9,41370	10,58630	9,98588	28
33	9,40006	9,41422	10,58578	9,98584	27
34	9,40055	9,41474	10,58526	9,98581	26
35	9,40103	9,41526	10,58474	9,98578	25
36	9,40152	9,41578	10,58422	9,98574	24
37	9,40200	9,41629	10,58371	9,98571	23
38	9,40249	9 41681	10,58319	9,98568	22
39	9,40297	9 41733	10,58267	9,98565	21
40	9,40346	9,41784	10,58216	9,98561	20
41	9,40394	9,41836	10,58164	9,98558	19
42	9,40442	9,41887	10,58113	9,98555	18
43	9,40490	9,41939	10,58061	9,98551	17
44	9,40538	9,41990	10,58010	9,98548	16
45	9,40586	9,42041	10,57959	9,98545	15
46	9,40634	9,42093	10,57907	9,98541	14
47	9,40682	9,42144	10,57856	9,98538	13
48	9,40730	9,42195	10,57805	9,98535	12
49	9,40778	9,42246	10,57754	9,98531	11
50	9,40825	9,42297	10,57703	9,98528	10
51	9,40873	9,42348	10,57652	9,98525	9
52	9,40921	9,42399	10,57601	9,98521	8
53	9,40968	9,42450	10,57550	9,98518	7
54	9,41016	9,42501	10,57499	9,98515	6
55	9,41063	9,42552	10,57448	9,98511	5
56	9,41111	9,42603	10,57397	9,98508	4
57	9,41158	9,42653	10 57347	9,98505	3
58	9,41205	9,42704	10,57296	9,98501	2
59	9,41252	9,42755	10,57245	9,98498	1
60	9,41300	9,42805	10,57195	9,98494	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min

15°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,41300	9,42805	10,57195	9,98494	60
1	9,41347	9,42856	10,57144	9,98491	59
2	9,41394	9,42906	10,57094	9,98488	58
3	9,41441	9,42957	10,57043	9,98484	57
4	9,41488	9,43007	10,56993	9,98481	56
5	9,41535	9,43057	10,56943	9,98477	55
6	9,41582	9,43108	10,56892	9,98474	54
7	9,41628	9,43158	10,56842	9,98471	53
8	9,41675	9,43208	10,56792	9,98467	52
9	9,41722	9,43258	10,56742	9,98464	51
10	9,41768	9,43308	10,56692	9,98460	50
11	9,41815	9,43358	10,56642	9,98457	49
12	9,41861	9,43408	10,56592	9,98453	48
13	9,41908	9,43458	10,56542	9,98450	47
14	9,41954	9,43508	10,56492	9,98447	46
15	9,42001	9,43558	10,56442	9,98443	45
16	9,42047	9,43607	10,56393	9,98440	44
17	9,42093	9,43657	10,56343	9,98436	43
18	9,42140	9,43707	10,56293	9,98433	42
19	9,42186	9,43756	10,56244	9,98429	41
20	9,42232	9,43806	10,56194	9,98426	40
21	9,42278	9,43855	10,56145	9,98422	39
22	9,42324	9,43905	10,56095	9,98419	38
23	9,42370	9,43954	10,56046	9,98415	37
24	9,42416	9,44004	10,55996	9,98412	36
25	9,42461	9,44053	10,55947	9,98409	35
26	9,42507	9,44102	10,55898	9,98405	34
27	9,42553	9,44151	10,55849	9,98402	33
28	9,42599	9,44201	10,55799	9,98398	32
29	9,42644	9,44250	10,55750	9,98395	31
30	9,42690	9,44299	10,55701	9,98391	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

74°

15°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,42690	9,44299	10,55701	9,98391	30
31	9,42735	9,44348	10,55652	9,98388	29
32	9,42781	9,14397	10,55603	9,98384	28
33	9,42826	9,44446	10,55554	9,98381	27
34	9,42872	9,44495	10,55505	9,98377	26
35	9,42917	9,44544	10,55456	9,98373	25
36	9,42962	9,44592	10,55408	9,98370	24
37	9,43008	9,44641	10,55359	9,98366	23
38	9 43053	9,44690	10,55310	9,98363	22
39	9,43098	9,44738	10,55262	9,98359	21
40	9,43143	9,44787	10,55213	9,98356	20
41	9,43188	9,44836	10,55164	9,98352	19
42	9,43233	9,44884	10,55116	9,98349	18
43	9,43278	9,44933	10,55067	9 98345	17
44	9,43323	9,44981	10 55019	9,98342	16
45	9,43367	9,45029	10,54971	9,98338	15
46	9,43412	9,45078	10,54922	9,98334	14
47	9,43457	9,45126	10,54874	9,98331	13
48	9,43502	9,45174	10 54826	9,98327	12
49	9,43546	9,45222	10,54778	9,98324	11
50	9,43591	9,45271	10,54729	9,98320	10
51	9,43635	9,45319	10,54681	9,98317	9
52	9,43680	9,45367	10,54633	9,98313	8
53	9,43724	9,45415	10,54585	9,98309	7
54	9,43769	9,45463	10,54537	9,98306	6
55	9,43813	9,45511	10,54489	9,98302	5
56	9,43857	9,45559	10,54441	9,98299	4
57	9,13901	9,45606	10,54394	9,98295	3
58	9,43946	9,45654	10,54346	9,98291	2
59	9,43990	9,45702	10,54298	9,98288	1
60	9,44034	9,45750	10,54250	9,98284	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

16°

Min.	Seno.	Tang.	Cotg.	Coseno	Min
0	9,44034	9,45750	10,54250	9,98284	60
1	9,44078	9,45797	10,54203	9,98281	59
2	9,44122	9,45845	10,54155	9,98277	58
3	9,44166	9,45892	10,54108	9,98273	57
4	9,44210	9,45940	10,54060	9,98270	56
5	9 44253	9,45987	10,54013	9,98266	55
6	9,44297	9,46035	10,53965	9,98262	54
7	9,44341	6,46082	10,53918	9,98259	53
8	9,44385	9,46130	10,53870	9,98255	52
9	9,44428	9,46177	10,53823	9,98251	51
10	9,44472	9 46224	10,53776	9,98248	50
11	9 44516	9,46271	10,53729	9,98244	49
12	9,44559	9,46319	10,53681	9,98240	48
13	9,44602	9,46366	10,53634	9,98237	47
14	9,44646	9,46413	10,53587	9,98233	46
15	9,44689	9,46460	10,53540	9,98229	45
16	9,44733	9,46507	10,53493	9,98226	44
17	9,44776	9,46554	10,53446	9,98222	43
18	9 44819	9,46601	10,53399	9,98218	42
19	9,44862	9,46648	10,53352	9,98215	41
20	9,44905	9,46694	10,53306	9,98211	40
21	9,44948	9,46741	10,53259	9,98207	39
22	9,44992	9,46788	10,53212	9,98204	38
23	9,15035	9,46835	10,53165	9,98200	37
24	9,45077	9,46881	10,53119	9,98196	36
25	9,45120	9,46928	10,53072	9,98192	35
26	9,45163	9,46975	10,53025	9,98189	34
27	9,45206	9,47021	10,52979	9,98185	33
28	9,45249	9,47068	10,52932	9,98181	32
29	9,45292	9,47114	10,52886	9 98177	31
30	9,45334	9,47160	10,52840	9,98174	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

73°

16°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,45334	9,47160	10,52840	9,98174	30
31	9,45377	9,47207	10,52793	9,98170	29
32	9,45419	9,47253	10,52747	9,98166	28
33	9,45462	9,47299	10,52701	9,98162	27
34	9,45504	9,47346	10,52654	9,98159	26
35	9,45547	9,47392	10,52608	9,98155	25
36	9,45589	9,47438	10,52562	9,98151	24
37	9,45632	9,47484	10,52516	9,98147	23
38	9,45674	9,47530	10,52470	9,98144	22
39	9,45716	9,47576	10,52424	9,98140	21
40	9,45758	9,47622	10,52378	9,98136	20
41	9,45801	9,47668	10,52332	9,98132	19
42	9,45843	9,47714	10,52286	9,98129	18
43	9,45885	9,47760	10,52240	9,98125	17
44	9,45927	9,47806	10,52194	9,98121	16
45	9,45969	9,47852	10,52148	9,98117	15
46	9,46011	9,47897	10,52103	9,98113	14
47	9 46053	9,47943	10,52057	9,98110	13
48	9 46095	9,47989	10,52011	9,98106	12
49	9,46136	9,48035	10,51965	9,98102	11
50	9,46178	9,48080	10,51920	9,98098	10
51	9,46220	9,48126	10,51874	9,98094	9
52	9,46262	9,48171	10,51829	9,98090	8
53	9,46303	9,48217	10,51783	9,98087	7
54	9,46345	9,48262	10,51738	9,98083	6
55	9,46386	9,48307	10,51693	9,98079	5
56	9,46428	9,48353	10,51647	9,98075	4
57	9,46469	9,48398	10,51602	9,98071	3
58	9,46511	9,48443	10,51557	9,98067	2
59	9,46552	9,48489	10,51511	9,98063	1
60	9,46594	9 48534	10,51466	9,98060	0
Min	Coseno	Cotg.	Tang,	Seno	Min.

73°

17°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,46594	9,48534	10,51466	9,98060	60
1	9,46635	9,48579	10 51421	9,98056	59
2	9,46676	9,48624	10,51376	9,98052	58
3	9,46717	9,48669	10,51331	9,98048	57
4	9,46758	9,48714	10,51286	9,98044	56
5	9,46800	9,48759	10,51241	9,98040	55
6	9,46841	9,48804	10,51196	9,98036	54
7	9,46882	9,48849	10,51151	9,98032	53
8	9,46923	9,48894	10,51106	9 98029	52
9	9,46964	9,48939	10,51061	9,98025	51
10	9,47005	9,48984	10,51016	9,98021	50
11	9,47045	9,49029	10,50971	9,98017	49
12	9,47086	9,49073	10,50927	9,98013	48
13	9,47127	9,49118	10,50882	9,98009	47
14	9,47168	9,49163	10,50837	9,98005	46
15	9,47209	9,49207	10,50793	9,98001	45
16	9,47249	9,49252	10,50748	9,97997	44
17	9,47290	9,49296	10,50704	9,97993	43
18	9,47330	9,49341	10,50659	9,97989	42
19	9,47371	9,49385	10,50615	9,97986	41
20	9,47411	9,49430	10,50570	9,97982	40
21	9,47452	9,49474	10,50526	9,97978	39
22	9,47492	9,49519	10,50481	9,97974	38
23	9,47533	9,49563	10,50437	9,97970	37
24	9,47573	9,49607	10,50393	9,97966	36
25	9,47613	9,49652	10,50348	9,97962	35
26	9,47654	9,49696	10,50304	9,97958	34
27	9,47694	9,19740	10,50260	9,97954	33
28	9,47734	9,49784	10,50216	9,97950	32
29	9,47774	9,49828	10,50172	9,97946	31
30	9,47814	9,49872	10,50128	9,97942	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

72°

17°

Min.	Seno.	Tang.	Cotg.	Coseno	Min
30	9,47814	9,49872	10,50128	9,97942	30
31	9,47854	9,49916	10,50084	9,97938	29
32	9,47894	9,49960	10,50040	9,97934	28
33	9,47934	9,50004	10,49996	9,97930	27
34	9,47974	9,50048	10,49952	9,97926	26
35	9,48014	9,50092	10,49908	9,97922	25
36	9,48054	9,50136	10,49864	9,97918	24
37	9,48094	9,50180	10,49820	9,97914	23
38	9,48133	9,50223	10,49777	9,97910	22
39	9,48173	9,50267	10,49733	9,97906	21
40	9,48213	9,50311	10,49689	9,97902	20
41	9,48252	9,50355	10,49645	9,97898	19
42	9,48292	9,50398	10,49602	9,97894	18
43	9,48332	9,50442	10,49558	9,97890	17
44	9,48371	9,50485	10,49515	9,97886	16
45	9,48411	9,50529	10,49471	9,97882	15
46	9,48450	9,50572	10,49428	9,97878	14
47	9,48490	9,50616	10,49384	9,97874	13
48	9,48529	9,50659	10,49341	9,97870	12
49	9,48568	9,50703	10,49297	9,97866	11
50	9,48607	9,50746	10,49254	9,97861	10
51	9,48647	9,50789	10,49211	9,97857	9
52	9,48686	9,50833	10,49167	9,97853	8
53	9,48725	9,50876	10,49124	9,97849	7
54	9,48764	9,50919	10,49081	9,97845	6
55	9,48803	9,50962	10,49038	9,97841	5
56	9,48842	9,51005	10,48995	9,97837	4
57	9,48881	9,51048	10,48952	9,97833	3
58	9,48920	9,51092	10,48908	9,97829	2
59	9,48959	9,51135	10,48865	9,97825	1
60	9,48998	9,51178	10,48822	9,97821	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

72°

18°

Min.	Seno.	Tang,	Cotg.	Coseno	Min.
0	9,48995	9,51178	10,48822	9,97821	60
1	9,49037	9,51221	10,48779	9,97817	59
2	9,49076	9,51264	10,48736	9,97812	58
3	9,49115	9,51306	10,48694	9,97808	57
4	9,49153	9,51349	10,48651	9,97804	56
5	9,49192	9,51392	10,48608	9,97800	55
6	9,49231	9 51435	10,48565	9,97796	54
7	9,49269	9 51478	10,48522	9,97792	53
8	9,49308	9 51520	10,48480	9,97788	52
9	9,49347	9 51563	10,48437	9,97784	51
10	9,49385	9,51606	10,48394	9,97779	50
11	9,49424	9 51648	10,48352	9,97775	49
12	9,49462	9,51691	10,48309	9,97771	48
13	9,49500	9,51734	10,48266	9,97767	47
14	9,49539	9 51776	10 48224	9,97763	46
15	9,49577	9,51819	10,48181	9,97759	45
16	9,49615	9,51861	10,48139	9,97754	44
17	9,49654	9 51903	10,48097	9,97750	43
18	9,49692	9,51946	10,48054	9,97746	42
19	9,49730	9,51988	10,48012	9,97742	41
20	9,49768	9,52031	10,47969	9,97738	40
21	9,49806	9,52073	10 47927	9,97734	39
22	9,49844	9 52115	10,47885	9,97729	38
23	9,49882	9,52157	10,47843	9,97725	37
24	9,49920	9,52200	10,47800	9,97721	36
25	9,49958	9 52242	10,47758	9,97717	35
26	9,49996	9,52284	10,47716	9,97713	34
27	9,50034	9,52326	10,47674	9,97708	33
28	9,50072	9,52368	10,47632	9,97704	32
29	9,50110	9,52410	10,47590	9,97700	31
30	9,50148	9,52452	10,47548	9,97696	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

71°

18°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,50148	9,52452	10,47548	9,97696	30
31	9,50185	9,52494	10,47506	9,97691	29
32	9,50223	9,52536	10,47464	9,97687	28
33	9,50261	9,52578	10,47422	9,97683	27
34	9,50298	9,52620	10,47380	9,97679	26
35	9,50336	9,52661	10,47339	9,97674	25
36	9,50374	9,52703	10,47297	9,97670	24
37	9,50411	9,52745	10,47255	9,97666	23
38	9,50449	9,52787	10,47213	9,97662	22
39	9,50486	9,52829	10,47171	9,97657	21
40	9,50523	9,52870	10,47130	9,97653	20
41	9,50561	9,52912	10,47088	9,97649	19
42	9,50598	9,52953	10,47047	9,97645	18
43	9,50635	9,52995	10,47005	9,97640	17
44	9,50673	9,53037	10,46963	9,97636	16
45	9,50710	9,53078	10,46922	9,97632	15
46	9,50747	9,53120	10,46880	9,97628	14
47	9,50784	9,53161	10,46839	9,97623	13
48	9,50821	9,53202	10,46798	9,97619	12
49	9,50858	9,53244	10,46756	9,97615	11
50	9,50896	9,53285	10,46715	9,97610	10
51	9,50933	9,53327	10,46673	9,97606	9
52	9,50970	9,53368	10,46632	9,97602	8
53	9,51007	9,53409	10,46591	9,97597	7
54	9,51043	9,53450	10,46550	9,97593	6
55	9,51080	9,53492	10,46508	9,97589	5
56	9,51117	9,53533	10,46467	9,97584	4
57	9,51154	9,53574	10,46426	9,97580	3
58	9,51191	9,53615	10,46385	9,97576	2
59	9,51227	9,53656	10,46344	9,97571	1
60	9,51264	9,53697	10,46303	9,97567	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

19°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,51264	9,53697	10,46303	9,97567	60
1	9,51301	9,53738	10,46262	9,97563	59
2	9,51338	9,53779	10,46221	9,97558	58
3	9,51374	9,53820	10,46180	9,97554	57
4	9,51411	9,53861	10,46139	9,97550	56
5	9,51447	9,53902	10,46098	9,97545	55
6	9,51484	9,53943	10,46057	9,97541	54
7	9,51520	9,53984	10,46016	9,97536	53
8	9,51557	9,54025	10,45975	9,97532	52
9	9,51593	9,54065	10,45935	9,97528	51
10	9,51629	9,54106	10,45894	9,97523	50
11	9,51666	9,54147	10,45853	9,97519	49
12	9,51702	9,54187	10,45813	9,97515	48
13	9,51738	9,54228	10,45772	9,97510	47
14	9,51774	9,54269	10,45731	9,97506	46
15	9,51811	9,54309	10,45691	9,97501	45
16	9,51847	9,54350	10,45650	9,97497	44
17	9,51883	9,54390	10,45610	9,97492	43
18	9,51919	9,54431	10,45569	9,97488	42
19	9,51955	9,54471	10,45529	9,97484	41
20	9,51991	9,54512	10,45488	9,97479	40
21	9,52027	9,54552	10,45448	9,97475	39
22	9,52063	9,54593	10,45407	9,97470	38
23	9,52099	9,54633	10,45367	9,97466	37
24	9,52135	9,54673	10,45327	9,97461	36
25	9,52171	9,54714	10,45286	9,97457	35
26	9,52207	9,54754	10,45246	9,97453	34
27	9,52242	9,54794	10,45206	9,97448	33
28	9,52278	9,54835	10,45165	9,97444	32
29	9,52314	9,54875	10,45125	9,97439	31
30	9,52350	9,54915	10,45085	9,97435	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

70°

19°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,52350	9,54915	10,45085	9,97435	30
31	9,52385	9,54955	10,45045	9,97430	29
32	9,52421	9,54995	10,45005	9,97426	28
33	9,52456	9,55035	10,44965	9 97421	27
34	9,52492	9,55075	10,44925	9 97417	26
35	9,52527	9,55115	10,44885	9,97412	25
36	9,52563	9,55155	10,44845	9,97408	24
37	9,52598	9,55195	10,44805	9,97403	23
38	9,52634	9,55235	10,44765	9,97399	22
39	9,52669	9,55275	10,44725	9,97394	21
40	9,52705	9,55315	10,44685	9,97390	20
41	9,52740	9,55355	10,44645	9,97385	19
42	9,52775	9,55395	10,44605	9·97381	18
43	9,52811	9,55434	10,44566	9,97376	17
44	9,52846	9,55474	10,44526	9,97372	16
45	9,52881	9,55514	10,44486	9·97367	15
46	9,52916	9,55554	10,44446	9,97363	14
47	9,52951	9,55593	10,44407	9,97358	13
48	9,52986	9,55633	10,44367	9,97353	12
49	9,53021	9,55673	10,44327	9,97349	11
50	9,53056	9,55712	10,44288	9,97344	10
51	9,53092	9,55752	10,44248	9,97340	9
52	9,53126	9,55791	10,44209	9,97335	8
53	9,53161	9,55831	10,44169	9,97331	7
54	9,53196	9,55870	10,44130	9,97326	6
55	9,53231	9,55910	10,44090	9,97322	5
56	9,53266	9,55949	10,44051	9,97317	4
57	9,53301	9,55989	10,44011	9,97312	3
58	9,53336	9,56028	10,43972	9,97308	2
59	9,53370	9,56067	10,43933	9,97303	1
60	9,53405	9,56107	10,43893	9,97299	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

70°

20°

Min.	Seno.	Tang.	Cotg.	Coseno	Min
0	9,53405	9,56107	10,43893	9,97299	60
1	9,53440	9,56146	10,43854	9,97294	59
2	9,53475	9,56185	10,43815	9,97289	58
3	9,53509	9,56224	10,43776	9,97285	57
4	9,53544	9,56264	10,43736	9,97280	56
5	9,53578	9,56303	10,43697	9,97276	55
6	9,53613	9,56342	10,43658	9,97271	54
7	9,53647	6,56381	10,43619	9,97266	53
8	9,53682	9,56420	10,43580	9,97262	52
9	9,53716	9,56459	10,43541	9,97257	51
10	9,53751	9,56498	10,43502	9,97252	50
11	9,53785	9,56537	10,43463	9,97248	49
12	9,53819	9,56576	10,43424	9,97243	48
13	9,53854	9,56615	10,43385	9,97238	47
14	9,53888	9,56654	10,43346	9,97234	46
15	9,53922	9,56693	10,43307	9,97229	45
16	9,53957	9,56732	10,43268	9,97224	44
17	9,53991	9,56771	10,43229	9,97220	43
18	9,54025	9,56810	10,43190	9,97215	42
19	9,54059	9,56849	10,43151	9,97210	41
20	9,54093	9,56887	10,43113	9,97206	40
21	9,54127	9,56926	10,43074	9,97201	39
22	9,54161	9,56965	10,43035	9,97196	38
23	9,54195	9,57004	10,42996	9,97192	37
24	9,54229	9,57042	10,42958	9,97187	36
25	9,54263	9,57081	10,42919	9,97182	35
26	9,54297	9,57120	10,42880	9,97178	34
27	9,54331	9,57158	10,42842	9,97173	33
28	9,54365	9,57197	10,42803	9,97168	32
29	9,54399	9,57235	10,42765	9,97163	31
30	9,54433	9,57274	10,42726	9,97159	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

69°

20°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,54433	9,57274	10,42726	9,97159	30
31	9,54466	9,57312	10,42688	9,97154	29
32	9,54500	9,57351	10,42649	9,97149	28
33	9,54534	9,57389	10,42611	9,97145	27
34	9,54567	9,57428	10,42572	9,97140	26
35	9,54601	9,57466	10,42534	9,97135	25
36	9,54635	9,57504	10,42496	9,97130	24
37	9,54668	9,57543	10,42457	9,97126	23
38	9,54702	9,57581	10,42419	9,97121	22
39	9,54735	9,57619	10,42381	9,97116	21
40	9,54769	9,57658	10,42342	9,97111	20
41	9,54802	9,57696	10,42304	9,97107	19
42	9,54836	9,57734	10,42266	9,97102	18
43	9,54869	9,57772	10,42228	9 97097	17
44	9,54903	9,57810	10 42190	9,97092	16
45	9,54936	9,57849	10,42151	9,97087	15
46	9,54969	9,57887	10,42113	9,97083	14
47	9,55003	9,57925	10,42075	9,97078	13
48	9,55036	9 57963	10 42037	9,97073	12
49	9,55069	9,58001	10,41999	9,97068	11
50	9,55102	9,58039	10,41961	9,97063	10
51	9,55136	9,58077	10,41923	9,97059	9
52	9,55169	9,58115	10,41885	9,97054	8
53	9,55202	9,58153	10,41847	9,97049	7
54	9,55235	9,58191	10,41809	9,97044	6
55	9,55268	9,58229	10,41771	9,97039	5
56	9,55301	9,58267	10,41733	9,97035	4
57	9,55334	9,58304	10,41696	9,97030	3
58	9,55367	9,58342	10,41658	9,97025	2
59	9,55400	9,58380	10,41620	9,97020	1
60	9,55433	9,58418	10,41582	9,97015	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

69°

21°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,55433	9,58418	10,41582	9,97015	60
1	9,55466	9,58455	10·41545	9,97010	59
2	9,55499	9,58493	10·41507	9 97005	58
3	9,55532	9,58531	10 41469	9,97001	57
4	9,55564	9,58569	10,41431	9,96996	56
5	9,55597	9,58606	10,41394	9,96991	55
6	9,55630	9 58644	10,41356	9,96986	54
7	9,55663	9 58681	10,41319	9,96981	53
8	9,55695	9,58719	10,41281	9,96976	52
9	9,55728	9,58757	10,41243	9,96971	51
10	9,55761	9,58794	10,41206	9,96966	50
11	9,55793	9,58832	10·41168	9,96962	49
12	9,55826	9,58869	10,41131	9,96957	48
13	9,55858	9,58907	10,41093	9,96952	47
14	9,55891	9,58944	10,41056	9,96947	46
15	9,55923	9,58981	10,41019	9,96942	45
16	9,55956	9,59019	10·40981	9,96937	44
17	9,55988	9,59056	10,40944	9,96932	43
18	9,56021	9,59094	10,40906	9,96927	42
19	9,56053	9 59131	10,40869	9,96922	41
20	9,56085	9,59168	10,40832	9,96917	40
21	9,56118	9,59205	10,40795	9,96912	39
22	9,56150	9,59243	10,40757	9,96907	38
23	9·56182	9,59280	10,40720	9,96903	37
24	9,56215	9,59317	10,40683	9,96898	36
25	9,56247	9,59354	10,40646	9,96893	35
26	9,56279	9,59391	10,40609	9,96888	34
27	9,56311	9,59429	10,40571	9,96883	33
28	9,56343	9,59466	10,40534	9,96878	32
29	9,56375	9,59503	10,40497	9,96873	31
30	9,56408	9,59540	10,40460	9,96868	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

68°

21°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9·56408	9,59540	10,40460	9,96868	30
31	9,56440	9,59577	10,40423	9,96863	29
32	9,56472	9,59614	10,40386	9,96858	28
33	9,56504	9,59651	10,40349	9,96853	27
34	9·56536	9,59688	10,10312	9,96848	26
35	9,56568	9,59725	10,40275	9,96843	25
36	9,56599	9,59762	10,40238	9,96838	24
37	9,56631	9,59799	10,40201	9,96833	23
38	9·56663	9,59835	10,40165	9,96828	22
39	9 56695	9 59872	10,40128	9,96823	21
40	9,56727	9,59909	10,40091	9,96818	20
41	9,56759	9 59946	10,40054	9,96813	19
42	9,56790	9·59983	10,40017	9,96808	18
43	9·56822	9,60019	10,39981	9,96803	17
44	9,56854	9,60056	10,39944	9,96798	16
45	9,56886	9·60093	10,39907	9,96793	15
46	9 56917	9 60130	10,39870	9,96788	14
47	9 56949	9,60166	10,39834	9,96783	13
48	9,56980	9,60203	10,39797	9,96778	12
49	9·57012	9,60240	10,39760	9,96772	11
50	9,57044	9,60276	10,39724	9,96767	10
51	9,57075	9,60313	10,39687	9,96762	9
52	9,57107	9,60349	10,39651	9,96757	8
53	9,57138	9,60386	10,39614	9,96752	7
54	9·57169	9·60422	10,39578	9,96747	6
55	9,57201	9,60459	10,39541	9,96742	5
56	9,57232	9,60495	10,39505	9,96737	4
57	9,57264	9,60532	10,39468	9,96732	3
58	9,57295	9,60568	10,39432	9,96727	2
59	9,57326	9,60605	10,39395	9,96722	1
60	9,57358	9,60641	10,39359	9,96717	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

68°

22°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,57358	9,60641	10,39359	9,96717	60
1	9,57389	9,60677	10,39323	9,96711	59
2	9,57420	9,60714	10,39286	9,96706	58
3	9,57451	9,60750	10,39250	9,96701	57
4	9,57482	9,60786	10,39214	9,96696	56
5	9,57514	9,60823	10,39177	9,96691	55
6	9,57545	9,60859	10,39141	9,96686	54
7	9,57576	9,60895	10,39105	9,96681	53
8	9,57607	9,60931	10,39069	9 96676	52
9	9,57638	9,60967	10,39033	9,96670	51
10	9,57669	9,61004	10,38996	9,96665	50
11	9,57700	9,61040	10,38960	9,96660	49
12	9,57731	9,61076	10,38924	9,96655	48
13	9,57762	9,61112	10,38888	9,96650	47
14	9,57793	9,61148	10,38852	9,96645	46
15	9,57824	9,61184	10,38816	9,96640	45
16	9,57855	9,61220	10,38780	9,96634	44
17	9,57885	9,61256	10,38744	9,96629	43
18	9,57916	9,61292	10,38708	9,96624	42
19	9,57947	9,61328	10,38672	9,96619	41
20	9,57978	9,61364	10,38636	9,96614	40
21	9,58008	9,61400	10,38600	9,96608	39
22	9,58039	9,61436	10,38564	9,96603	38
23	9,58070	9,61472	10,38528	9,96598	37
24	9,58101	9,61508	10,38492	9,96593	36
25	9,58131	9,61544	10,38456	9,96588	35
26	9,58162	9,61579	10,38421	9,96582	34
27	9,58192	9,61615	10,38385	9,96577	33
28	9,58223	9,61651	10,38349	9,96572	32
29	9,58253	9,61687	10,38313	9,96567	31
30	9,58284	9,61722	10,38278	9,96562	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

67°

22°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,58284	9,61722	10,38278	9,96562	30
31	9,58314	9,61758	10,38242	9,96556	29
32	9,58345	9,61794	10,38206	9,96551	28
33	9,58375	9,61830	10,38170	9,96546	27
34	9,58406	9,61865	10,38135	9,96541	26
35	9,58436	9,61901	10,38099	9,96535	25
36	9,58467	9,61936	10,38064	9,96530	24
37	9,58497	9,61972	10,38028	9,96525	23
38	9,58527	9,62008	10,37992	9,96520	22
39	9,58557	9,62043	10,37957	9,99514	21
40	9,58588	9,62079	10,37921	9,96509	20
41	9,58618	9,62114	10,37886	9,96504	19
42	9,58648	9,62150	10,37850	9,96498	18
43	9,58678	9,62185	10,37815	9,96493	17
44	9,58709	9,62221	10,37779	9,96488	16
45	9,58739	9,62256	10,37744	9,96483	15
46	9,58769	9,62292	10,37708	9,96477	14
47	9,58799	9,62327	10,37673	9,96472	13
48	9,58829	9,62362	10,37638	9,96467	12
49	9,58859	9,62398	10,37602	9,96461	11
50	9,58889	9,62433	10,37567	9,96456	10
51	9,58919	9,62468	10,37532	9,96451	9
52	9,58949	9,62504	10,37496	9,96445	8
53	9,58979	9,62539	10,37461	9,96440	7
54	9,59009	9,62574	10,37426	9,96435	6
55	9,59039	9,62609	10,37391	9,96429	5
56	9,59068	9,62645	10,37355	9,96424	4
57	9,59099	9,62680	10,37320	9,96419	3
58	9,59128	9,62715	10,37285	9,96413	2
59	9,59158	9,62750	10,37250	9,96408	1
60	9,59188	9,62785	10,37215	9,96403	0
Min.	Coseno	Cotg.	Tang,	Seno	Min.

67°

23°

Min	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,59188	9,62785	10,37215	9,96403	60
1	9,59218	9,62820	10,37180	9,96397	59
2	9,59247	9,62855	10,37145	9,96392	58
3	9,59277	9,62890	10 37110	9,96387	57
4	8,59307	9,62926	10,37074	9,96381	56
5	9,59336	9,62961	10,37039	9,96376	55
6	9,59366	9,62996	10,37004	9,96370	54
7	9,59396	9,63031	10,36969	9,96365	53
8	9,59425	9,63066	10,36934	9,96360	52
9	9,59455	9,63101	10,36899	9,96354	51
10	9,59484	9,63135	10,36865	9,96349	50
11	9,59514	9.63170	10,36830	9,96343	49
12	9,59543	9,63205	10,36795	9,96338	48
13	9,59573	9,63240	10,36760	9,96333	47
14	9,59602	9,63275	10,36725	9,96327	46
15	9,59632	9:63310	10,36690	9,96322	45
16	9,59661	9,63345	10,36655	9,96316	44
17	9,59690	9,63379	10,36621	9,96311	43
18	9,59720	9,63414	10,36586	9,96305	42
19	9,59749	9,63449	10,36551	9,96300	41
20	9,59778	9,63484	10,36516	9,96294	40
21	9,59808	9,63519	10,36481	9,96289	39
22	9,59837	9,63553	10,36447	9,96284	38
23	9,59866	9,63588	10,36412	9,96278	37
24	9,59895	9 63623	10,36377	9,96273	36
25	9,59924	9,63657	10,36343	9,96267	35
26	9,59954	9,63692	10,36308	9,96262	34
27	9,59983	9,63726	10,36274	9,96256	33
28	9,60012	9,63761	10,36239	9,96251	32
29	9,60041	9,63796	10,36204	9,96245	31
30	9,60070	9,63830	10,36170	9,96240	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

66°

23°

Min.	Seno.	Tang.	Cotg.	Coseno	Min
30	9,60070	9,63830	10,36170	9,96240	30
31	9,60099	9,63865	10,36135	9,96234	29
32	9,60128	9,63899	10,36101	9,96229	28
33	9,60157	9,63934	10,36066	9,96223	27
34	9,60186	9,63968	10,36032	9,96218	26
35	9,60215	9,64003	10,35997	9,96212	25
36	9,60244	9,64037	10,35963	9,96207	24
37	9,60273	9,64072	10,35928	9,96201	23
38	9,60302	9,64106	10,35894	9,96196	22
39	9,60331	9,64140	10,35860	9,96190	21
40	9,60359	9,64175	10,35825	9,96185	20
41	9,60388	9,64209	10,35791	9,96179	19
42	9,60417	9,64243	10,35757	9,96174	18
43	9,60446	9,64278	10,35722	9,96168	17
44	9,60474	9,64312	10,35688	9,96162	16
45	9,60503	9,64346	10,35654	9,96157	15
46	9,60532	9,64381	10,35619	9,96151	14
47	9,60561	9,64415	10,35585	9,96146	13
48	9,60589	9,64449	10,35551	9,96140	12
49	9,60618	9,64483	10,35517	9,96135	11
50	9,60646	9,64517	10,35483	9,96129	10
51	9,60675	9,64552	10,35448	9,96123	9
52	9,60704	9,64586	10,35414	9,96118	8
53	9,60732	9,64620	10,35380	9,96112	7
54	9,60761	9,64654	10,35346	9,96107	6
55	9,60789	9,64688	10,35312	9,96101	5
56	9,60818	9,64722	10,35278	9,96095	4
57	9,60846	9,64756	10,35244	9,96090	3
58	9,60875	9,64790	10,35210	9,96084	2
59	9,60903	9,64824	10,35176	9,96079	1
60	9,60931	9,64858	10,35142	9,96073	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

66°

24°

Min.	Seno.	Tang,	Cotg.	Coseno	Min.
0	9,60931	9,64858	10,35142	9,96073	60
1	9,60960	9,64892	10,35108	9,96067	59
2	9,60988	9,64926	10,35074	9,96062	58
3	9,61016	9,64960	10,35040	9,96056	57
4	9,61045	9,64994	10,35006	9,96050	56
5	9,61073	9,65028	10,34972	9,96045	55
6	9,61101	9,65062	10,34938	9,96039	54
7	9,61129	9,65096	10,34904	9,96034	53
8	9,61158	9,65130	10,34870	9,96028	52
9	9,61186	9,65164	10,34836	9,96022	51
10	9,61214	9,65197	10,34803	9,96017	50
11	9,61242	9,65231	10,34769	9,96011	49
12	9,61270	9,65265	10,34735	9,96005	48
13	9,61298	9,65299	10,34701	9,96000	47
14	9,61326	9,65333	10,34667	9,95994	46
15	9,61354	9,65366	10,34634	9,95988	45
16	9,61382	9,65400	10,34600	9,95982	44
17	9,61411	9,65434	10,34566	9,95977	43
18	9,61438	9,65467	10,34533	9,95971	42
19	9,61466	9,65501	10,34499	9,95965	41
20	9,61494	9,65535	10,34465	9,95960	40
21	9,61522	9,65568	10,34432	9,95954	39
22	9,61550	9,65602	10,34398	9,95948	38
23	9,61578	9,65636	10,34364	9,95942	37
24	9,61606	9,65669	10,34331	9,95937	36
25	9,61634	9,65703	10,34297	9,95931	35
26	9,61662	9,65736	10,34264	9,95925	34
27	9,61689	9,65770	10,34230	9,95920	33
28	9,61717	9,65803	10,34197	9,95914	32
29	9,61745	9,65837	10,34163	9,95908	31
30	9,61773	9,65870	10,34130	9,95902	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

65°

24°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,61773	9,65870	10,34130	9,95902	30
31	9,61800	9,65904	10,34096	9,95897	29
32	9,61828	9,65937	10,34063	9,95891	28
33	9,61856	9,65971	10,34029	9,95885	27
34	9,61883	9,66004	10,33996	9,95879	26
35	9,61911	9,66038	10,33962	9,95873	25
36	9,61939	9,66071	10,33929	9,95868	24
37	9,61966	9,66104	10,33896	9,95862	23
38	9,61994	9,66138	10,33862	9,95856	22
39	9,62021	9,66171	10,33829	9,95850	21
40	9,62049	9,66204	10,33796	9,95844	20
41	9,62076	9,66238	10,33762	9,95839	19
42	9,62104	9,66271	10,33729	9,95833	18
43	9,62131	9,66304	10,33696	9,95827	17
44	9,62159	9,66337	10,33663	9,95821	16
45	9,62186	9,66371	10,33629	9,95815	15
46	9,62214	9,66404	10,33596	9,95810	14
47	9,62241	9,66437	10,33563	9,95804	13
48	9,62268	9,66470	10 33530	9,95798	12
49	9,62296	9,66503	10,33497	9,95792	11
50	9,62323	9,66537	10,33463	9,95786	10
51	9,62350	9,66570	10,33430	9,95780	9
52	9,62377	9,66603	10,33397	9,95775	8
53	9,62405	9,66636	10,33364	9,95769	7
54	9,62432	9,66669	10,33331	9,95763	6
55	9,62459	9,66702	10,33298	9,95757	5
56	9,62486	9,66735	10,33265	9,95751	4
57	9,62513	9,66768	10,33232	9,95745	3
58	9,62541	9,66801	10,33199	9,95739	2
59	9,62568	9,66834	10,33166	9,95733	1
60	9,62595	9,66867	10,33133	9,95728	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

65°

25°

Min.	Seno.	Tang.	Cotg.	Coseno	Min
0	9,62595	9,66867	10,33133	9,95728	60
1	9,62622	9,66900	10 33100	9,95722	59
2	9,62649	9,66933	10.33067	9,95716	58
3	9,62676	9,66966	10 33034	9,95710	57
4	9,62703	9,66999	10,33001	9,95704	56
5	9,62730	9,67032	10,32968	9,95698	55
6	9,62757	9,67065	10,32935	9,95692	54
7	9,62784	9,67098	10,32902	9,95686	53
8	9,62811	9,67131	10,32869	9,95680	52
9	9,62838	9,67163	10,32837	9,95674	51
10	9,62865	9,67196	10,32804	9,95668	50
11	9,62892	9,67229	10,32771	9,95663	49
12	9,62918	9,67262	10,32738	9,95657	48
13	9,62945	9,67295	10,32705	9,95651	47
14	9,62972	9,67327	10,32673	9,95645	46
15	9,62999	9,67360	10,32640	9,95639	45
16	9,63026	9,67393	10.32607	9,95633	44
17	9,63052	9,67426	10,32574	9,95627	43
18	9,63079	9,67458	10,32542	9,95621	42
19	9,63106	9 67491	10,32509	9,95615	41
20	9,63133	9,67524	10,32476	9,95609	40
21	9,63159	9,67556	10,32444	9,95603	39
22	9,63186	9,67589	10,32411	9,95597	38
23	9 63213	9,67622	10,32378	9,95591	37
24	9,63239	9,67654	10,32346	9,95585	36
25	9,63266	9,67687	10,32313	9,95579	35
26	9,63292	9,67719	10,32281	9,95573	34
27	9,63319	9,67752	10,32248	9,95567	33
28	9,63345	9,67785	10,32215	9,95561	32
29	9,63372	9,67817	10,32183	9,95555	31
30	9, 63398	9,67850	10,32150	9,95549	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min

64°

25°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,63398	9,67850	10,32150	9,95549	30
31	9,63425	9,67882	10,32118	9,95543	29
32	9,63451	9,67915	10,32085	9,95537	28
33	9,63478	9,67947	10,32053	9,95531	27
34	9,63504	9,67980	10,32020	9,95525	26
35	9,63531	9,68012	10,31988	9,95519	25
36	9,63557	9,68044	10,31956	9,95513	24
37	9,63583	9,68077	10,31923	9,95507	23
38	9,63610	9,68109	10,31891	9,95500	22
39	9,63636	9,68142	10,31858	9,95494	21
40	9,63662	9,68174	10,31826	9,95488	20
41	9,63689	9,68206	10,31794	9,95482	19
42	9,63715	9,68239	10,31761	9,95476	18
43	9,63741	9,68271	10,31729	9,95470	17
44	9,63767	9,68303	10,31697	9,95464	16
45	9,63794	9,68336	10,31664	9,95458	15
46	9,63820	9,68368	10,31632	9,95452	14
47	9,63846	9,68400	10,31600	9,95446	13
48	9,63872	9,68432	10,31568	9,95440	12
49	9,63898	9,68465	10,31535	9,95434	11
50	9,63924	9,68497	10,31503	9,95427	10
51	9,63950	9,68529	10,31471	9,95421	9
52	9,63976	9,68561	10,31439	9,95415	8
53	9,64002	9,68593	10,31407	9,95409	7
54	9,64028	9,68626	10,31374	9,95403	6
55	9,64054	9,68658	10,31342	9,95397	5
56	9,64080	9,68690	10,31310	9,95391	4
57	9,64106	9,68722	10,31278	9,95384	3
58	9,64132	9,68754	10,31246	9,95378	2
59	9,64158	9,68786	10,31214	9,95372	1
60	9,64184	9,68818	10,31182	9,95366	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

64°

26°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,64184	9,68818	10,31182	9,95366	60
1	9,64210	9,68850	10,31150	9,95360	59
2	9,64236	9,68882	10,31118	9,95354	58
3	9,64262	9,68914	10,31086	9,95348	57
4	9,64288	9,68946	10,31054	9,95341	56
5	9,64313	9,68978	10,31022	9,95335	55
6	9,64339	9,69010	10,30990	9,95329	54
7	9,64365	6,69042	10,30958	9,95323	53
8	9,64391	9,69074	10,30926	9,95317	52
9	9,64417	9,69106	10,30894	9,95310	51
10	9,64442	9,69138	10,30862	9,95304	50
11	9,64468	9,69170	10,30830	9,95298	49
12	9,64494	9,69202	10,30798	9,95292	48
13	9,64519	9,69234	10,30766	9,95286	47
14	9,64545	9,69266	10,30734	9,95279	46
15	9,64571	9,69298	10,30702	9,95273	45
16	9,64596	9,69329	10,30671	9,95267	44
17	9,64622	9,69361	10,30639	9,95261	43
18	9,64647	9,69393	10,30607	9,95254	42
19	9,64673	9,69425	10,30575	9,95248	41
20	9,64698	9,69457	10,30543	9,95242	40
21	9,64724	9,69488	10,30512	9,95236	39
22	9,64749	9,69520	10,30480	9,95229	38
23	9,64775	9,69552	10,30448	9,95223	37
24	9,64800	9,69584	10,30416	9,95217	36
25	9,64826	9,69615	10,30385	9,95211	35
26	9,64851	9,69647	10,30353	9,95204	34
27	9,64877	9,69679	10,30321	9,95198	33
28	9,64902	9,69710	10,30290	9,95192	32
29	9,64927	9,69742	10,30258	9,95185	31
30	9,64953	9,69774	10,30226	9,95179	30
Min	Coseno	Cotg.	Tang.	Seno.	Min.

63°

26°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,64953	9,69774	10,30226	9,95179	30
31	9,64978	9,69805	10,30195	9,95173	29
32	9,65003	9,69837	10,30163	9,95167	28
33	9,65029	9,69868	10,30132	9,95160	27
34	9,65054	9,69900	10,30100	9,95154	26
35	9,65079	9,69932	10,30068	9,95148	25
36	9,65104	9,69963	10,30037	9,95141	24
37	9,65130	9,69995	10,30005	9,95135	23
38	9,65155	9,70026	10,29974	9,95129	22
39	9,65180	9,70058	10,29942	9,95122	21
40	9,65205	9,70089	10,29911	9,95116	20
41	9,65230	9,70121	10,29879	9,95110	19
42	9,65255	9,70152	10,29848	9,95103	18
43	9,65281	9,70184	10,29816	9,95097	17
44	9,65306	9,70215	10,29785	9,95090	16
45	9,65331	9,70247	10,29753	9,95084	15
46	9,65356	9,70278	10,29722	9,95078	14
47	9,65381	9,70309	10,29691	9,95071	13
48	9,65406	9,70341	10,29659	9,95065	12
49	9,65431	9,70372	10,29628	9,95059	11
50	9,65456	9,70404	10,29596	9,95052	10
51	9,65481	9,70435	10,29565	9,95046	9
52	9,65506	9,70466	10,29534	9,95039	8
53	9,65531	9,70498	10,29502	9,95033	7
54	9,65556	9,70529	10,29471	9,95027	6
55	9,65580	9,70560	10,29440	9,95020	5
56	9,65605	9,70592	10,29408	9,95014	4
57	9,65630	9,70623	10,29377	9,95007	3
58	9,65655	9,70654	10,29346	9,95001	2
59	9,65680	9,70685	10,29315	9,94995	1
60	9,65705	9,70717	10,29283	9,94988	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

63°

27°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,65705	9,70717	10,29283	9,94988	60
1	9,65729	9,70748	10,29252	9,94982	59
2	9,65754	9,70779	10,29221	9,94975	58
3	9,65779	9,70810	10,29190	9,94969	57
4	9,65804	9,70841	10,29159	9,94962	56
5	9,65828	9,70873	10,29127	9,94956	55
6	9,65853	9,70904	10,29096	9,94949	54
7	9,65878	9,70935	10,29065	9,94943	53
8	9,65902	9,70966	10,29034	9,94936	52
9	9,65927	9,70997	10,29003	9,94930	51
10	9,65952	9,71028	10,28972	9,94923	50
11	9,65976	9,71059	10,28941	9,94917	49
12	9,66001	9,71090	10,28910	9,94911	48
13	9,66025	9,71121	10,28879	9,94904	47
14	9,66050	9,71153	10,28847	9,94898	46
15	9,66075	9,11184	10,28816	9,94891	45
16	9,66099	9,71215	10,28785	9,94885	44
17	9,66124	9,71246	10,28754	9,94878	43
18	9,66148	9,71277	10,28723	9,94871	42
19	9,66173	9,71308	10,28692	9,94865	41
20	9,66197	9,71339	10,28661	9,94858	40
21	9,66221	9,71370	10,28630	9,94852	39
22	9,66246	9,71401	10,28599	9,94845	38
23	9,66270	9,71431	10,28569	9,94839	37
24	9,66295	9,71462	10,28538	9,94832	36
25	9,66319	9,71493	10,28507	9,94826	35
26	9,66343	9,71524	10,28476	9,94819	34
27	9,66368	9,71555	10,28445	9,94813	33
28	9,66392	9,71586	10,28414	9,94806	32
29	9,66416	9,71617	10,28383	9,94799	31
30	9,66441	9,71648	10,28352	9,94793	30
Min	Coseno	Cotg.	Tang.	Seno.	Min.

62°

27°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,66441	9,71648	10,28352	9,94793	30
31	9,66465	9,71679	10,28321	9,94786	29
32	9,66489	9,71709	10,28291	9,94780	28
33	9,66513	9,71740	10,28260	9,94773	27
34	9,66537	9,71771	10,28229	9,94767	26
35	9,66562	9,71802	10,28198	9,94760	25
36	9,66586	9,71833	10,28167	9,94753	24
37	9,66610	9,71863	10,28137	9,94747	23
38	9,66634	9,71894	10,28106	9,94740	22
39	9,66658	9,71925	10,28075	9,94734	21
40	9,66682	9,71955	10,28045	9,94727	20
41	9,66706	9,71986	10,28014	9,94720	19
42	9,66731	9,72017	10,27983	9,94714	18
43	9,66755	9,72048	10,27952	9,94707	17
44	9,66779	9,72078	10,27922	9,94700	16
45	9,66803	9,72109	10,27891	9,94694	15
46	9,66827	9,72140	10,27860	9,94687	14
47	9,66851	9,72170	10,27830	9,94680	13
48	9,66875	9,72201	10,27799	9,94674	12
49	9,66899	9,72231	10,27769	9,94667	11
50	9,66922	9,72262	10,27738	9,94660	10
51	9,66946	9,72293	10,27707	9,94654	9
52	9,66970	9,72323	10,27677	9,94647	8
53	9,66994	9,72354	10,27646	9,94640	7
54	9,67018	9,72384	10,27616	9,94634	6
55	9,67042	9,72415	10,27585	9,94627	5
56	9,67066	9,72445	10,27555	9,94620	4
57	9,67090	9,72476	10,27524	9,94614	3
58	9,67113	9,72506	10,27494	9,94607	2
59	9,67137	9,72537	10,27463	9,94600	1
60	9,67161	9,72567	10,27433	9,94593	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

62°

28°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,67161	9,72567	10,27433	9,94593	60
1	9,67185	9,72598	10,27402	9,94587	59
2	9,67208	9,72628	10,27372	9,94580	58
3	9,67232	9,72659	10,27341	9,94573	57
4	9,67256	9,72689	10,27311	9,94567	56
5	9,67280	9,72720	10,27280	9,94560	55
6	9,67303	9,72750	10,27250	9,94553	54
7	9,67327	9,72780	10,27220	9,94546	53
8	9,67350	9,72811	10,27189	9,94540	52
9	9,67374	9,72841	10,27159	9,94533	51
10	9,67398	9,72872	10,27128	9,94526	50
11	9,67421	9,72902	10,27098	9,94519	49
12	9,67445	9,72932	10,27068	9,94513	48
13	9,67468	9,72963	10,27037	9,94506	47
14	9,67492	9,72993	10,27007	9,94499	46
15	9,67515	9,73023	10,26977	9,94492	45
16	9,67539	9,73054	10,26946	9,94485	44
17	9,67562	9,73084	10,26916	9,94479	43
18	9,67586	9,73114	10,26886	9,94472	42
19	9,67609	9,73144	10,26856	9,94465	41
20	9,67633	9,73175	10,26825	9,94458	40
21	9,67656	9,73205	10,26795	9,94451	39
22	9,67680	9,73235	10,26765	9,94445	38
23	9,67703	9,73265	10,26735	9,94438	37
24	9,67726	9,73295	10,26705	9,94431	36
25	9,67750	9,73326	10,26674	9,94424	35
26	9,67773	9,73356	10,26644	9,94417	34
27	9,67796	9,73386	10,26614	9,94410	33
28	9,67820	9,73416	10,26584	9,94404	32
29	9,67843	9,73446	10,26554	9,94397	31
30	9,67866	9,73476	10,26524	9,94390	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

61°

28°

Min	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,67866	9,73476	10,26524	9 94390	30
31	9,67890	9,73507	10,26493	9,94383	29
32	9,67913	9,73537	10,26463	9,94376	28
33	9,67936	9,73567	10,26433	9,94369	27
34	9,67959	9,73597	10,26403	9,94362	26
35	9,67982	9,73627	10,26373	9,94355	25
36	9,68006	9,73657	10,26343	6.94349	24
37	9,68029	9,73687	10,26313	9,94342	23
38	9,68052	9,73717	10,26283	9,94335	22
39	9,68075	9,73747	10,26253	9 94328	21
40	9,68098	9,73777	10,26223	9,94321	20
41	9,68121	9,73807	10,26193	9,94314	19
42	9,68144	9,73837	10,26163	9,94307	18
43	9,68167	9,73867	10,26133	9,94300	17
44	9,68190	9,73897	10,26103	9,94293	16
45	9,68213	9,73927	10,26073	9,94286	15
46	9,68237	9,73957	10,26043	9,94279	14
47	9,68260	9,73987	10,26013	9,94273	13
48	9,68283	9,74017	10,25983	9,94266	12
49	9,68305	9,74047	10,25953	9,94259	11
50	9,68328	9,74077	10,25923	9,94252	10
51	9,68351	9,74107	10,25893	9,94245	9
52	9,68374	9,74137	10,25863	9,94238	8
53	9,68397	9,74166	10,25834	9,94231	7
54	9,68420	9,74196	10,25804	9,94224	6
55	9,68443	9,74226	10,25774	9,94217	5
56	9,68466	9,74256	10,25744	9,94210	4
57	9,68489	9,74286	10,25714	9,94203	3
58	9,68512	9,74316	10,25684	9,94196	2
59	9,68534	9,74345	10,25655	9,94189	1
60	9,68557	9,74375	10,25625	9,94182	0
Min.	Coseno	Cotg.	Tang.	Seno,	Min.

61°

29°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,68557	9,74375	10,25625	9,94182	60
1	9,68580	9,74405	10,25595	9,94175	59
2	9,68603	9,74435	10,25565	9,94168	58
3	9,68625	9,74465	10,25535	9,94161	57
4	9,68648	9,74494	10,25506	9,94154	56
5	9,68671	9,74524	10,25476	9,94147	55
6	9,68694	9,74554	10,25446	9,94140	54
7	9,68716	9,74583	10,25417	9,94133	53
8	9,68739	9,74613	10,25387	9,94126	52
9	9,68762	9,74643	10,25357	9,94119	51
10	9,68784	9,74673	10,25327	9,94112	50
11	9,68807	9,74702	10,25298	9,94105	49
12	9,68829	9,74732	10,25268	9,94098	48
13	9,68852	9,74762	10,25238	9,94090	47
14	9,68875	9,74791	10,25209	9,94083	46
15	9,68897	9,74821	10,25179	9,94076	45
16	9,68920	9,74851	10,25149	9,94069	44
17	9,68942	9,74880	10,25120	9,94062	43
18	9,68965	9,74910	10,25090	9,94055	42
19	9,68987	9,74939	10,25061	9,94048	41
20	9,69010	9,74969	10,25031	9,94041	40
21	9,69032	9,74998	10,25002	9,94034	39
22	9,69055	9,75028	10,24972	9,94027	38
23	9,69077	9,75058	10,24942	9,94020	37
24	9,69100	9,75087	10,24913	9,94012	36
25	9,69122	9,75117	10,24883	9,94005	35
26	9,69144	9,75146	10,24854	9,93998	34
27	9,69167	9,75176	10,24824	9,93991	33
28	9,69189	9,75205	10,24795	9,93984	32
29	9,69212	9,75235	10,24765	9,93977	31
30	9,69234	9,75264	10,24736	9,93970	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

60°

29°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,69234	9,75264	10,24736	9,93970	30
31	9,69256	9,75294	10,24706	9,93963	29
32	9,69279	9,75323	10,24677	9,93955	28
33	9,69301	9,75353	10,24647	9,93948	27
34	9,69323	9,75382	10,34618	9,93941	26
35	9,69345	9,75411	10 24589	9,93934	25
36	9,69368	9,75441	10,24559	9,93927	24
37	9,69390	9,75470	10,24530	9,93920	23
38	9,69412	9,75500	10,24500	9,93912	22
39	9,69434	9,75529	10,24471	9,93905	21
40	9,69456	9,75558	10,24442	9,93898	20
41	9,69479	9,75588	10,24412	9,93891	19
42	9,69501	9,75617	10,24383	9,93884	18
43	9,69523	9,75647	10,24353	9,93876	17
44	9,69545	9,75676	10,24324	9,93869	16
45	9,69567	9,75705	10,24295	9,93862	15
46	9,69589	9,75735	10,24265	9,93855	14
47	9,69611	9,75764	10,24236	9,93847	13
48	9,69633	9,75793	10,24207	9,93840	12
49	9,69655	9,75822	10,24178	9,93833	11
50	9,69677	9,75852	10,24148	9,93826	10
51	9,69699	9,75881	10,24119	9,93819	9
52	9,69721	9,75910	10,24090	9,93811	8
53	9,69743	9,75939	10,24061	9,93804	7
54	9,69765	9,75969	10,24031	9,93797	6
55	9,69787	9,75998	10,24002	9,93789	5
56	9,69809	9,76027	10,23973	9,93782	4
57	9,69831	9,76056	10,23944	9,93775	3
58	9,69853	9,76086	10,23914	9,93768	2
59	9,69875	9,76115	10,23885	9,93760	1
60	9,69897	9,76144	10,23856	9,93753	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

60°

30°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,69897	9,76144	10,23856	9,93753	60
1	9,69919	9,76173	10,23827	9,93746	59
2	9,69941	9,76202	10,23798	9,93738	58
3	9,69963	9,76231	10,23769	9,93731	57
4	9,69984	9,76261	10,23739	9,93724	56
5	9,70006	9,76290	10,23710	9,93717	55
6	9,70028	9,76319	10,23681	9,93709	54
7	9,70050	6,76348	10,23652	9,93702	53
8	9,70072	9,76377	10,23623	9,93695	52
9	9,70093	9,76406	10,23594	9,93687	51
10	9,70115	9,76435	10,23565	9,93680	50
11	9,70137	9,76464	10,23536	9,93673	49
12	9,70159	9,76493	10,23507	9,93665	48
13	9,70180	9,76522	10,23478	9,93658	47
14	9,70202	9,76551	10,23449	9,93650	46
15	9,70224	9,76580	10,23420	9,93643	45
16	9,70245	9,76609	10,23391	9,93636	44
17	9,70267	9,76639	10,23361	9,93628	43
18	9,70288	9,76668	10,23332	9,93621	42
19	9,70310	9,76697	10,23303	9,93614	41
20	9,70332	9,76725	10,23275	9,93606	40
21	9,70353	9,76754	10,23246	9,93599	39
22	9,70375	9,76783	10,23217	9,93591	38
23	9,70396	9,76812	10,23188	9,93584	37
24	9,70418	9,76841	10,23159	9,93577	36
25	9,70439	9,76870	10,23130	9,93569	35
26	9,70461	9,76899	10,23101	9,93562	34
27	9,70482	9,76928	10,23072	9,93554	33
28	9,70504	9,76957	10,23043	9,93547	32
29	9,70525	9,76986	10,23014	9,93539	31
30	9,70547	9,77015	10,22985	9,93532	30
Min	Coseno	Cotg.	Tang.	Seno.	Min.

59°

30°

Min.	Seno.	Tang.	Cotg.	Coseno	Min,
30	9,70547	9,77015	10,22985	9,93532	30
31	9,70568	9,77044	10,22956	9,93525	29
32	9,70590	9,77073	10,22927	9,93517	28
33	9,70611	9,77101	10,22899	9,93510	27
34	9,70633	9,77130	10,22870	9,93502	26
35	9,70654	9,77159	10,22841	9,93495	25
36	9,70675	9,77188	10,22812	9,93487	24
37	9,70697	9,77217	10,22783	9,93480	23
38	9,70718	9,77246	10,22754	9,93472	22
39	9,70739	9,77274	10,22726	9,93465	21
40	9,70761	9,77303	10,22697	9,93457	20
41	9,70782	9,77332	10,22668	9,93450	19
42	9,70803	9,77361	10,22639	9,93442	18
43	9,70824	9,77390	10,22610	9,93435	17
44	9,70846	9,77418	10,22582	9,93427	16
45	9,70867	9,77447	10,22553	9,93420	15
46	9,70888	9,77476	10,22524	9,93412	14
47	9,70909	9,77505	10,22495	9,93405	13
48	9,70931	9,77533	10,22467	9,93397	12
49	9,70952	9,77562	10,22438	9,93390	11
50	9,70973	9,77591	10,22409	9,93382	10
51	9,70994	9,77619	10,22381	9,93375	9
52	9,71015	9,77648	10,22352	9,93367	8
53	9,71036	9,77677	10,22323	9,93360	7
54	9,71058	9,77706	10,22294	9,93352	6
55	9,71079	9,77734	10,22266	9,93344	5
56	9,71100	9,77763	10,22237	9,93337	4
57	9,71121	9,77791	10,22209	9,93329	3
58	9,71142	9,77820	10,22180	9,93322	2
59	9,71163	9,77849	10,22151	9,93314	1
60	9,71184	9,77877	10,22123	9,93307	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

59°

31°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,71184	9,77877	10,22123	9,93307	60
1	9,71205	9,77906	10,22094	9,93299	59
2	9,71226	9,77935	10,22065	9,93291	58
3	9,71247	9,77963	10,22037	9,93284	57
4	9,71268	9,77992	10,22008	9,93276	56
5	9,71289	9,78020	10,21980	9,93269	55
6	9,71310	9,78049	10,21951	9,93261	54
7	9,71331	9,78077	10,21923	9,93253	53
8	9,71352	9,78106	10,21894	9,93246	52
9	9,71373	9,78135	10,21865	9,93238	51
10	9,71393	9,78163	10,21837	9,93230	50
11	9,71414	9,78192	10 21808	9,93223	49
12	9,71435	9,78220	10,21780	9,93215	48
13	9,71456	9,78249	10,21751	9,93207	47
14	9,71477	9,78277	10,21723	9,93200	46
15	9,71498	9,18306	10,21694	9,93192	45
16	9,71519	9,78334	10,21666	9,93184	44
17	9,71539	9,78363	10,21637	9,93177	43
18	9,71560	9,78391	10,21609	9,93169	42
19	9,71581	9,78419	10,21581	9,93161	41
20	9,71602	9,78448	10,21552	9,93154	40
21	9,71622	9,78476	10,21524	9,93146	39
22	9,71643	9,78505	10,21495	9,93138	38
23	9,71664	9,78533	10,21467	9,93131	37
24	9,71685	9,78562	10,21438	9,93123	36
25	9,71705	9,78590	10,21410	9,93115	35
26	9,71726	9,78618	10,21382	9,93108	34
27	9,71747	9,78647	10,21353	9,93100	33
28	9,71767	9,78675	10,21325	9,93092	32
29	9,71788	9,78704	10,21296	9,93084	31
30	9,71809	9,78732	10,21268	9,93077	30
Min	Coseno	Cotg.	Tang.	Seno.	Min.

58°

31°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,71809	9,78732	10,21268	9,93077	30
31	9,71829	9,78760	10,21240	9,93069	29
32	9,71850	9,78789	10,21211	9,93061	28
33	9,71870	9,78817	10,21183	9,93053	27
34	9,71891	9,78845	10,21155	9,93046	26
35	9,71911	9,78874	10,21126	9,93038	25
36	9,71932	9,78902	10,21098	9,93030	24
37	9,71952	9,78930	10,21070	9,93022	23
38	9,71973	9,78959	10,21041	9,93014	22
39	9,71994	9,78987	10,21013	9,93007	21
40	9,72014	9,79015	10,20985	9,92999	20
41	9,72034	9,79043	10,20957	9,92991	19
42	9,72055	9,79072	10 20928	9,92983	18
43	9,72075	9,79100	10,20900	9,92976	17
44	9,72096	9,79128	10,20872	9,92968	16
45	9,72116	9,79156	10,20844	9,92960	15
46	9,72137	9,79185	10,20815	9,92952	14
47	9,72157	9,79213	10,20787	9,92944	13
48	9,72177	9,79241	10,20759	9,92936	12
49	9,72198	9,79269	10,20731	9,92929	11
50	9,72218	9,79297	10,20703	9,92921	10
51	9,72238	9,79326	10,20674	9,92913	9
52	9,72259	9,79354	10,20646	9,92905	8
53	9,72279	9,79382	10,20618	9,92897	7
54	9,72299	9,79410	10,20590	9,92889	6
55	9,72320	9,79438	10,20562	9,92881	5
56	9,72340	9,79466	10,20534	9,92874	4
57	9,72360	9,79495	10,20505	9,92866	3
58	9,72381	9,79523	10,20477	9,92858	2
59	9,72401	9,79551	10,20449	9,92850	1
60	9,72421	9,79579	10,20421	9,92842	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

58°

32°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,72421	9,79579	10,20421	9,92842	60
1	9,72441	9,79607	10,20393	9,92834	59
2	9,72461	9,79635	10,20365	9,92826	58
3	9,72482	9,79663	10,20337	9,92818	57
4	9,72502	9,79691	10,20309	9,92810	56
5	9,72522	9,79719	10,20281	9,92803	55
6	9,72542	9,79747	10,20253	9,92795	54
7	9,72562	9,79776	10,20224	9,92787	53
8	9,72582	9,79804	10,20196	9,92779	52
9	9,72602	9,79832	10,20168	9,92771	51
10	9,72622	9,79860	10,20140	9,92763	50
11	9,72643	9,79888	10,20112	9,92755	49
12	9,72663	9,79916	10,20084	9,92747	48
13	9,72683	9,79944	10,20056	9,92739	47
14	9,72703	9,79972	10,20028	9,92731	46
15	9,72723	9,80000	10,20000	9,92723	45
16	9,72743	9,80028	10,19972	9,92715	44
17	9,72763	9,80056	10,19944	9,92707	43
18	9,72783	9,80084	10,19916	9,92699	42
19	9,72803	9,80112	10,19888	9,92691	41
20	9,72823	9,80140	10,19860	9,92683	40
21	9,72843	9,80168	10,19832	9,92675	39
22	9,72863	9,80195	10,19805	9,92667	38
23	9,72883	9,80223	10,19777	9,92659	37
24	9,72902	9,80251	10,19749	9,92651	36
25	9,72922	9,80279	10,19721	9,92643	35
26	9,72942	9,80307	10,19693	9,92635	34
27	9,72962	9,80335	10,19665	9,92627	33
28	9,72982	9,80363	10,19637	9,92619	32
29	9,73002	9,80391	10,19609	9,92611	31
30	9,73022	9,80419	10,19581	9,92603	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

57°

32°

Min	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,73022	9,80419	10,19581	9 92603	30
31	9,73041	9,80447	10,19553	9,92595	29
32	9,73061	9,80474	10,19526	9,92587	28
33	9,73081	9,80502	10,19498	9,92579	27
34	9,73101	9,80530	10,19470	9,92571	26
35	9,73121	9,80558	10,19442	9,92563	25
36	9,73140	9,80586	10,19414	9 92555	24
37	9,73160	9,80614	10,19386	9,92546	23
38	9,73180	9,80642	10,19358	9,92538	22
39	9,73200	9,80669	10,19331	9 92530	21
40	9,73219	9,80697	10,19303	9,92522	20
41	9,73239	9,80725	10,19275	9,92514	19
42	9,73259	9,80753	10,19247	9,92506	18
43	9,73278	9,80781	10,19219	9,92498	17
44	9,73298	9,80808	10,19192	9,92490	16
45	9,73318	9,80836	10,19164	9,92482	15
46	9,73337	9,80864	10,19136	9,92473	14
47	9,73357	9,80892	10,19108	9,92465	13
48	9,73377	9,80919	10,19081	9,92457	12
49	9,73396	9,80947	10,19053	9,92449	11
50	9,73416	9,80975	10,19025	9,92441	10
51	9,73435	9,81003	10,18997	9,92433	9
52	9,73455	9,81030	10,18970	9,92425	8
53	9,73474	9,81058	10,18942	9,92416	7
54	9,73494	9,81086	10,18914	9,92408	6
55	9,73513	9,81113	10,18887	9,92400	5
56	9,73533	9,81141	10,18859	9,92392	4
57	9,73552	9,81169	10,18831	9,92384	3
58	9,73572	9,81196	10,18804	9,92376	2
59	9,73591	9,81224	10,18776	9,92367	1
60	9,73611	9,81252	10,18748	9,92359	0
Min.	Coseno	Cotg.	Tang.	Seno,	Min.

57°

33°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,73611	9,81252	10,18748	9,92359	60
1	9,73630	9,81279	10,18721	9,92351	59
2	9,73650	9,81307	10,18693	9,92343	58
3	9,73669	9,81335	10,18665	9,92335	57
4	9,73689	9,81362	10,18638	9,92326	56
5	9,73708	9,81390	10,18610	9,92318	55
6	9,73727	9,81418	10,18582	9,92310	54
7	9,73747	9,81445	10,18555	9,92302	53
8	9,73766	9,81473	10,18527	9,92293	52
9	9,73785	9,81500	10,18500	9,92285	51
10	9,73805	9,81528	10,18472	9,92277	50
11	9 73824	9,81556	10,18444	9,92269	49
12	9,73843	9,81583	10,18417	9,92260	48
13	9,73863	9,81611	10,18389	9,92252	47
14	9,73882	9,81638	10,18362	9,92244	46
15	9,73901	9,81666	10,18334	9,92235	45
16	9,73921	9,81693	10,18307	9,92227	44
17	9,73940	9,81721	10,18279	9,92219	43
18	9,73959	9,81748	10,18252	9,92211	42
19	9,73978	9,81776	10,18224	9,92202	41
20	9,73997	9,81803	10,18197	9,92194	40
21	9,74017	9,81831	10,18169	9,92186	39
22	9,74036	9,81858	10,18142	9,92177	38
23	9,74055	9,81886	10,18114	9,92169	37
24	9,74074	9,81913	10,18087	9,92161	36
25	9,74093	9,81941	10,18059	9,92152	35
26	9,74113	9,81968	10,18032	9,92144	34
27	9,74132	9,91996	10,18004	9,92136	33
28	9,74151	9,82023	10,17977	9,92127	32
29	9,74170	9,82051	10,17949	9,92119	31
30	9,74189	9,82078	10,17922	9,92111	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

56°

33°

Min	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,74189	9,82078	10,17922	9 92111	30
31	9,74208	9,82106	10,17894	9,92102	29
32	9,74227	9,82133	10,17867	9,92094	28
33	9,74246	9,82161	10,17839	9,92086	27
34	9,74265	9,82188	10,17812	9,92077	26
35	9,74284	9,82215	10,17785	9,92069	25
36	9,74303	9,82243	10,17757	9,92060	24
37	9,74322	9,82270	10,17730	9,92052	23
38	9,74341	9,82298	10,17702	9,92044	22
39	9,74360	9,82325	10,17675	9 92035	21
40	9,74379	9,82352	10,17648	9,92027	20
41	9,74398	9,82380	10,17620	9,92018	19
42	9,74417	9,82407	10,17593	9,92010	18
43	9,74436	9,82435	10,17565	9,92002	17
44	9,74455	9,82462	10,17538	9,91993	16
45	9,74474	9,82489	10,17511	9,91985	15
46	9,74493	9,82517	10,17483	9,91976	14
47	9,74512	9,82544	10,17456	9,91968	13
48	9,74531	9,82571	10,17429	9,91959	12
49	9,74549	9,82599	10,17401	9,91951	11
50	9,74568	9,82626	10,17374	9,91942	10
51	9,74587	9,82653	10,17347	9,91934	9
52	9,74606	9,82681	10,17319	9,91925	8
53	9,74625	9,82708	10,17292	9,91917	7
54	9,74644	9,82735	10,17265	9,91908	6
55	9,74662	9,82762	10,17238	9,91900	5
56	9,74681	9,82790	10,17210	9,91891	4
57	9,74700	9,82817	10,17183	9,91883	3
58	9,74719	9,82844	10,17156	9,91874	2
59	9,74737	9,82871	10,17129	9,91866	1
60	9,74756	9,82899	10,17101	9,91857	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

56°

34°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,74756	9,82899	10,17101	9,91857	60
1	9,74775	9,82926	10,17074	9,91849	59
2	9,74794	9,82953	10,17047	9,91840	58
3	9,74812	9,82980	10,17020	9,91832	57
4	9,74831	9,83008	10,16992	9,91823	56
5	9,74850	9,83035	10,16965	9,91815	55
6	9,74868	9,83062	10,16938	9,91806	54
7	9,74887	9,83089	10,16911	9,91798	53
8	9,74906	9,83117	10,16883	9,91789	52
9	9,74924	9,83144	10,16856	9,91781	51
10	9,74943	9,83171	10,16829	9,91772	50
11	9 74961	9,83198	10,16802	9,91763	49
12	9,74980	9,83225	10,16775	9,91755	48
13	9,74999	9,83252	10,16748	9,91746	47
14	9,75017	9,83280	10,16720	9,91738	46
15	9,75036	9,83307	10,16693	9,91729	45
16	9,75054	9,83334	10,16666	9,91720	44
17	9,75073	9,83361	10,16639	9,91712	43
18	9,75091	9,83388	10,16612	9,91703	42
19	9,75110	9,83415	10,16585	9,91695	41
20	9,75128	9,83442	10,16558	9,91686	40
21	9,75147	9,83470	10,16530	9,91677	39
22	9,75165	9,83497	10,16503	9,91669	38
23	9,75184	9,83524	10,16476	9,91660	37
24	9,75202	9,83551	10,16449	9,91651	36
25	9,75221	9,83578	10,16422	9,91643	35
26	9,75239	9,83605	10,16395	9,91634	34
27	9,75258	9,93632	10,16368	9,91625	33
28	9,75276	9,83659	10,16341	9,91617	32
29	9,75294	9,83686	10,16314	9,91608	31
30	9,75313	9,83713	10,16287	9,91599	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

55°

34°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,75313	9,83713	10,16287	9,91599	30
31	9,75331	9,83740	10,16260	9,91591	29
32	9,75350	9,83768	10,16232	9,91582	28
33	9,75368	9,83795	10,16205	9,91573	27
34	9,75386	9,83822	10,16178	9,91565	26
35	9,75405	9,83849	10,16151	9,91556	25
36	9,75423	9,83876	10,16124	9,91547	24
37	9,75441	9,83903	10,16097	9,91538	23
38	9,75459	9,83930	10,16070	9,91530	22
39	9,75478	9,83957	10,16043	9,91521	21
40	9,75496	9,83984	10,16016	9,91512	20
41	9,75514	9,84011	10,15989	9,91504	19
42	9,75533	9,84038	10,15962	9,91495	18
43	9,75551	9,84065	10,15935	9,91486	17
44	9,75569	9,84092	10,15908	9,91477	16
45	9,75587	9,84119	10,15881	9,91469	15
46	9,75605	9,84146	10,15854	9,91460	14
47	9,75624	9,84173	10,15827	9,91451	13
48	9,75642	9,84200	10,15800	9,91442	12
49	9,75660	9,84227	10,15773	9,91433	11
50	9,75678	9,84254	10,15746	9,91425	10
51	9,75696	9,84280	10,15720	9,91416	9
52	9,75714	9,84307	10,15693	9,91407	8
53	9,75733	9,84334	10,15666	9,91398	7
54	9,75751	9,84361	10,15639	9,91389	6
55	9,75769	9,84388	10,15612	9,91381	5
56	9,75787	9,84415	10,15585	9,91372	4
57	9,75805	9,84442	10,15558	9,91363	3
58	9,75823	9,84469	10,15531	9,91354	2
59	9,75841	9,84496	10,15504	9,91345	1
60	9,75859	9,84523	10,15477	9,91336	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

55°

35°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,75859	9,84523	10,15477	9,91336	60
1	9,75877	9,84550	10,15450	9,91328	59
2	9,75895	9,84576	10,15424	9,91319	58
3	9,75913	9,84603	10,15397	9,91310	57
4	9,75931	9,84630	10,15370	9,91301	56
5	9,75949	9,84657	10,15343	9,91292	55
6	9,75967	9,84684	10,15316	9,91283	54
7	9,75985	9,84711	10,15289	9,91274	53
8	9,76003	9,84738	10,15262	9,91266	52
9	9,76021	9,84764	10,15236	9,91257	51
10	9,76039	9,84791	10,15209	9,91248	50
11	9,76057	9,84818	10,15182	9,91239	49
12	9,76075	9,84845	10,15155	9,91230	48
13	9,76093	9,84872	10,15128	9,91221	47
14	9,76111	9,84899	10,15101	9,91212	46
15	9,76129	9,84925	10,15075	9,91203	45
16	9,76146	9,84952	10,15048	9,91194	44
17	9,76164	9,84979	10,15021	9,91185	43
18	9,76182	9,85006	10,14994	9,91176	42
19	9,76200	9,85033	10,14967	9,91167	41
20	9,76218	9,85059	10,14941	9,91158	40
21	9,76236	9,85086	10,14914	9,91149	39
22	9,76253	9,85113	10,14887	9,91141	38
23	9,76271	9,85140	10,14860	9,91132	37
24	9,76289	9,85166	10,14834	9,91123	36
25	9,76307	9,85193	10,14807	9,91114	35
26	9,76324	9,85220	10,14780	9,91105	34
27	9,76342	9,85247	10,14753	9,91096	33
28	9,76360	9,85273	10,14727	9,91087	32
29	9,76378	9,85300	10,14700	9,91078	31
30	9,76395	9,85327	10,14673	9,91069	30
Min	Coseno	Cotg.	Tang.	Seno.	Min.

54°

35°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,76395	9,85327	10,14673	9,91069	30
31	9,76413	9,85354	10,14646	9,91060	29
32	9,76431	9,85380	10,14620	9,91051	28
33	9,76448	9,85407	10,14593	9,91042	27
34	9,76466	9,85434	10,14566	9,91033	26
35	9,76484	9,85460	10,14540	9,91023	25
36	9,76501	9,85487	10,14513	9,91014	24
37	9,76519	9,85514	10,14486	9,91005	23
38	9,76537	9,85540	10,14460	9,90996	22
39	9,76554	9,85567	10,14433	9,90987	21
40	9,76572	9,85594	10,14406	9,90978	20
41	9,76590	9,85620	10,14380	9,90969	19
42	9,76607	9,85647	10,14353	9,90960	18
43	9,76625	9,85674	10,14326	9,90951	17
44	9,76642	9,85700	10,14300	9,90942	16
45	9,76660	9,85727	10,14273	9,90933	15
46	9,76677	9,85754	10,14246	9,90924	14
47	9,76695	9,85780	10,14220	9,90915	13
48	9,76712	9,85807	10,14193	9,90906	12
49	9,76730	9,85834	10,14166	9,90896	11
50	9,76747	9,85860	10,14140	9,90887	10
51	9,76765	9,85887	10,14113	9,90878	9
52	9,76782	9,85913	10,14087	9,90869	8
53	9,76800	9,85940	10,14060	9,90860	7
54	9,76817	9,85967	10,14033	9,90851	6
55	9,76835	9,85993	10,14007	9,90842	5
56	9,76852	9,86020	10,13980	9,90832	4
57	9,76870	9,86046	10,13954	9,90823	3
58	9,76887	9,86073	10,13927	9,90814	2
59	9,76904	9,86100	10,13900	9,90805	1
60	9,76922	9,86126	10,13874	9,90796	0
Min	Coseno	Cotg.	Tang.	Seno.	Min

54°

36°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,76922	9,86126	10,13874	9,90796	60
1	9,76939	9,86153	10,13847	9,90787	59
2	9,76957	9,86179	10,13821	9,90777	58
3	9,76974	9,86206	10,13794	9,90768	57
4	9,76991	9,86232	10,13768	9,90759	56
5	9,77009	9,86259	10,13741	9,90750	55
6	9,77026	9,86285	10,13715	9,90741	54
7	9,77043	9,86312	10,13688	9,90731	53
8	9,77061	9,86338	10,13662	9,90722	52
9	9,77078	9,86365	10,13635	9,90713	51
10	9,77095	9,86392	10,13608	9,90704	50
11	9,77112	9,86418	10,13582	9,90694	49
12	9,77130	9,86445	10,13555	9,90685	48
13	9,77147	9,86471	10,13529	9,90676	47
14	9,77164	9,86498	10,13502	9,90667	46
15	9,77181	9,86524	10,13476	9,90657	45
16	9,77199	9,86551	10,13449	9,90648	44
17	9,77216	9,86577	10,13423	9,90639	43
18	9,77233	9,86603	10,13397	9,90630	42
19	9,77250	9,86630	10,13370	9,90620	41
20	9,77268	9,86656	10,13344	9,90611	40
21	9,77285	9,86683	10,13317	9,90602	39
22	9,77302	9,86709	10,13291	9,90592	38
23	9,77319	9,86736	10,13264	9,90583	37
24	9,77336	9,86762	10,13238	9,90574	36
25	9,77353	9,86789	10,13211	9,90565	35
26	9,77370	9,86815	10,13185	9,90555	34
27	9,77387	9,86842	10,13158	9,90546	33
28	9,77405	9,86868	10,13132	9,90537	32
29	9,77422	9,86894	10,13106	9,90527	31
30	9,77439	9,86921	10,13079	9,90518	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

53°

36°

Min.	Seno.	Tang.	Cotg.	Coseno	Min
30	9,77439	9,86921	10,13079	9,90518	30
31	9,77456	9,86947	10,13053	9,90509	29
32	9,77473	9,86974	10,13026	9,90499	28
33	9,77490	9,87000	10,13000	9,90490	27
34	9,77507	9,87027	10,12973	9,90480	26
35	9,77524	9,87053	10,12947	9,90471	25
36	9,77541	9,87079	10,12921	9,90462	24
37	9,77558	9,87106	10,12894	9,90452	23
38	9,77575	9,87132	10,12868	9,90443	22
39	9,77592	9,87158	10,12842	9,90434	21
40	9,77609	9,87185	10,12815	9,90424	20
41	9,77626	9,87211	10,12789	9,90415	19
42	9,77643	9,87238	10,12762	9,90405	18
43	9,77660	9,87264	10,12736	9,90396	17
44	9,77677	9,87290	10,12710	9,90386	16
45	9,77694	9,87317	10,12683	9,90377	15
46	9,77711	9,87343	10,12657	9,90368	14
47	9,77728	9,87369	10,12631	9,90358	13
48	9,77744	9,87396	10,12604	9,90349	12
49	9,77761	9,87422	10,12578	9,90339	11
50	9,77778	9,87448	10,12552	9,90330	10
51	9,77795	9,87475	10,12525	9,90320	9
52	9,77812	9,87501	10,12499	9,90311	8
53	9,77829	9,87527	10,12473	9,90301	7
54	9,77846	9,87554	10,12446	9,90292	6
55	9,77862	9,87580	10,12420	9,90282	5
56	9,77879	9,87606	10,12394	9,90273	4
57	9,77896	9,87633	10,12367	9,90263	3
58	9,77913	9,87659	10,12341	9,90254	2
59	9,77930	9,87685	10,12315	9,90244	1
60	9,77946	9,87711	10,12289	9,90235	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

53°

37°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,77946	9,87711	10,12289	9,90235	60
1	9,77963	9,87738	10,12262	9,90225	59
2	9,77980	9,87764	10,12236	9,90216	58
3	9,77997	9,37790	10,12210	9,90206	57
4	9,78013	9,87817	10,12183	9,90197	56
5	9,78030	9,87843	10,12157	9,90187	55
6	9,78047	9,87869	10,12131	9,90178	54
7	9,78063	9,87895	10,12105	9,90168	53
8	9,78080	9,87922	10,12078	9,90159	52
9	9,78097	9,87948	10,12052	9,90149	51
10	9,78113	9,87974	10,12026	9,90139	50
11	9,78130	9,88000	10 12000	9,90130	49
12	9,78147	9,88027	10,11973	9,90120	48
13	9,78163	9,88053	10,11947	9,90111	47
14	9,78180	9,88079	10,11921	9,90101	46
15	9,78197	9,88105	10,11895	9,90091	45
16	9,78213	9,88131	10,11869	9,90082	44
17	9,78230	9,88158	10,11842	9,90072	43
18	9,78246	9,88184	10,11816	9,90063	42
19	9,78263	9,88210	10,11790	9,90053	41
20	9,78280	9,88236	10,11764	9,90043	40
21	9,78296	9,88262	10,11738	9,90034	39
22	9,78313	9,88289	10,11711	9,90024	38
23	9,78329	9,88315	10,11685	9,90014	37
24	9,78346	9,88341	10,11659	9,90005	36
25	9,78362	9,88367	10,11633	9,89995	35
26	9,78379	9,88393	10,11607	9,89985	34
27	9,78395	9,88420	10,11580	9,89976	33
28	9,78412	9,88446	10,11554	9,89966	32
29	9,78428	9,88472	10,11528	9,89956	31
30	9,78445	9,88498	10,11502	9,89947	30
Min	Coseno	Cotg.	Tang.	Seno.	Min.

52°

37°

Min.	Seno.	Tang.	Cotg.	Coseno	Min
30	9,78445	9,88498	10,11502	9,89947	30
31	9,78461	9,88524	10,11476	9,89937	29
32	9,78478	9,88550	10,11450	9,89927	28
33	9,78494	9,88577	10,11423	9,89918	27
34	9,78510	9,88603	10,11397	9,89908	26
35	9,78527	9,88629	10,11371	9,89898	25
36	9,78543	9,88655	10,11345	9,89888	24
37	9,78560	9,88681	10,11319	9,89879	23
38	9,78576	9,88707	10,11293	9,89869	22
39	9,78592	9,88733	10,11267	9,89859	21
40	9,78609	9,88759	10,11241	9,89849	20
41	9,78625	9,88786	10,11214	9,89840	19
42	9,78642	9,88812	10,11188	9,89830	18
43	9,78658	9,88838	10,11162	9,89820	17
44	9,78674	9,88864	10,11136	9,89810	16
45	9,78691	9,88890	10,11110	9,89801	15
46	9,78707	9,88916	10,11084	9,89791	14
47	9,78723	9,88942	10,11058	9,89781	13
48	9,78739	9,88968	10,11032	9,89771	12
49	9,78756	9,88994	10,11006	9,89761	11
50	9,78772	9,89020	10,10980	9,89752	10
51	9,78788	9,89046	10,10954	9,89742	9
52	9,78805	9,89073	10,10927	9,89732	8
53	9,78821	9,89099	10,10901	9,89722	7
54	9,78837	9,89125	10,10875	9,89712	6
55	9,78853	9,89151	10,10849	9,89702	5
56	9,78869	9,89177	10,10823	9,89693	4
57	9,78886	9,89203	10,10797	9,89683	3
58	9,78902	9,89229	10,10771	9,89673	2
59	9,78918	9,89255	10,10745	9,89663	1
60	9,78934	9,89281	10,10719	9,89653	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

52°

38°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,78934	9,89281	10,10719	9,89653	60
1	9,78950	9,89307	10,10693	9,89643	59
2	9,78967	9,89333	10,10667	9,89633	58
3	9,78983	9,89359	10,10641	9,89624	57
4	9,78999	9,89385	10,10615	9,89614	56
5	9,79015	9,89411	10,10589	9,89604	55
6	9,79031	9,89437	10,10563	9,89594	54
7	9,79047	9,89463	10,10537	9,89584	53
8	9,79063	9,89489	10,10511	9,89574	52
9	9,79079	9,89515	10,10485	9,89564	51
10	9,79095	9,89541	10,10459	9,89554	50
11	9,79111	9,89567	10,10433	9,89544	49
12	9,79128	9,89593	10,10407	9,89534	48
13	9,79144	9,89619	10,10381	9,89524	47
14	9,79160	9,89645	10,10355	9,89514	46
15	9,79176	9,89671	10 10329	9,89504	45
16	9,79192	9,89697	10,10303	9,89495	44
17	9,79208	9,89723	10,10277	9,89485	43
18	9,79224	9,89749	10,10251	9,89475	42
19	9,79240	9,89775	10,10225	9,89465	41
20	9,79256	9,89801	10,10199	9,89455	40
21	9,79272	9,89827	10,10173	9,89445	39
22	9,79288	9,89853	10,10147	9,89435	38
23	9,79304	9,89879	10,10121	9,89425	37
24	9,79319	9,89905	10,10095	9,89415	36
25	9,79335	9,89931	10,10069	9,89405	35
26	9,79351	9,89957	10,10043	9,89395	34
27	9,79367	9,89983	10,10017	9,89385	33
28	9,79383	9,90009	10,09991	9,89375	32
29	9,79399	9,90035	10,09965	9,89364	31
30	9,79415	9,90061	10,09939	9,89354	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

51°

38°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,79415	9,90061	10,09939	9,89354	30
31	9,79431	9,90086	10,09914	9,89344	29
32	9,79447	9,90112	10,09888	9,89334	28
33	9,79463	9,90138	10,09862	9,89324	27
34	9,79478	9,90164	10,09836	9,89314	26
35	9,79494	9,90190	10,09810	9,89304	25
36	9,79510	9,90216	10,09784	9,89294	24
37	9,79526	9,90242	10,09758	9,89284	23
38	9,79542	9,90268	10,09732	9,89274	22
39	9,79558	9,90294	10,09706	9,89264	21
40	9,79573	9,90320	10,09680	9,89254	20
41	9,79589	9,90346	10,09654	9,89244	19
42	9,79605	9,90371	10,09629	9,89233	18
43	9,79621	9,90397	10,09603	9,89223	17
44	9,79636	9,90423	10,09577	9,89213	16
45	9,79652	9,90449	10,09551	9,89203	15
46	9,79668	9,90475	10,09525	9,89193	14
47	9,79684	9,90501	10,09499	9,89183	13
48	9,79699	9,90527	10,09473	9,89173	12
49	9,79715	9,90553	10,09447	9,89162	11
50	9,79731	9,90578	10,09422	9,89152	10
51	9,79746	9,90604	10,09396	9,89142	9
52	9,79762	9,90630	10,09370	9,89132	8
53	9,79778	9,90656	10,09344	9,89122	7
54	9,79793	9,90682	10,09318	9,89112	6
55	9,79809	9,90708	10,09292	9,89101	5
56	9,79825	9,90734	10,09266	9,89091	4
57	9,79840	9,90759	10,09241	9,89081	3
58	9,79856	9,90785	10,09215	9,89071	2
59	9,79872	9,90811	10,09189	9,89060	1
60	9,79887	9,90837	10,09163	9,89050	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

51°

39°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,79887	9,90837	10,09163	9,89050	60
1	9,79903	9,90863	10,09137	9,89040	59
2	9,79918	9,90889	10,09111	9,89030	58
3	9,79934	9,90914	10,09086	9,89020	57
4	9,79950	9,90940	10,09060	9,89009	56
5	9,79965	9,90966	10,09034	9,88999	55
6	9,79981	9,90992	10,09008	9,88989	54
7	9,79996	6,91018	10,08982	9,88978	53
8	9,80012	9,91043	10,08957	9,88968	52
9	9,80027	9,91069	10,08931	9,88958	51
10	9,80043	9 91095	10,08905	9,88948	50
11	9 80058	9,91121	10,08879	9,88937	49
12	9,80074	9,91147	10,08853	9,88927	48
13	9,80089	9,91172	10,08828	9,88917	47
14	9,80105	9,91198	10,08802	9,88906	46
15	9,80120	9,91224	10,08776	9,88896	45
16	9,80136	9,91250	10,08750	9,88886	44
17	9,80151	9,91276	10,08724	9,88875	43
18	9 80166	9,91301	10,08699	9,88865	42
19	9,80182	9,91327	10,08673	9,88855	41
20	9,80197	9,91353	10,08647	9,88844	40
21	9,80213	9,91379	10,08621	9,88834	39
22	9,80228	9,91404	10,08596	9,88824	38
23	9,80244	9,91430	10,08570	9,88813	37
24	9,80259	9,91456	10,08544	9,88803	36
25	9,80274	9,91482	10,08518	9,88793	35
26	9,80290	9,91507	10,08493	9,88782	34
27	9,80305	9,91533	10,08467	9,88772	33
28	9,80320	9,91559	10,08441	9,88761	32
29	9,80336	9,91585	10,08415	9,88751	31
30	9,80351	9,91610	10,08390	9,88741	30
Min	Coseno	Cotg.	Tang.	Seno.	Min.

50°

39°

Min	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,80351	9,91610	10,08390	9 88741	30
31	9,80366	9,91636	10,03364	9,88730	29
32	9,80382	9,91662	10,08338	9,88720	28
33	9,80397	9,91688	10,08312	9,88709	27
34	9,80412	9,91713	10,08287	9,88699	26
35	9,80428	9,91739	10,08261	9,88688	25
36	9,80443	9,91765	10,08235	9.88678	24
37	9,80458	9,91791	10,08209	9,88668	23
38	9,80473	9,91816	10,08184	9,88657	22
39	9,80489	9,91842	10,08158	9 88647	21
40	9,80504	9,91868	10,08132	9,88636	20
41	9,80519	9,91893	10,08107	9,88626	19
42	9,80534	9,91919	10,08081	9,88615	18
43	9,80550	9,91945	10,08055	9,88605	17
44	9,80565	9,91971	10,08029	9,88594	16
45	9,80580	9,91996	10,08004	9,88584	15
46	9,80595	9,92022	10,07978	9,88573	14
47	9,80610	9,92048	10,07952	9,88563	13
48	9,80625	9,92073	10,07927	9,88552	12
49	9,80641	9,92099	10,07901	9,88542	11
50	9,80656	9,92125	10,07875	9,88531	10
51	9,80671	9,92150	10,07850	9,88521	9
52	9,80686	9,92176	10,07824	9,88510	8
53	9,80701	9,92202	10,07798	9,88499	7
54	9,80716	9,92227	10,07773	9,88489	6
55	9,80731	9,92253	10,07747	9,88478	5
56	9,80746	9,92279	10,07721	9,88468	4
57	9,80762	9,92304	10,07696	9,88457	3
58	9,80777	9,92330	10,07670	9,88447	2
59	9,80792	9,92356	10,07644	9,88436	1
60	9,80807	9,92381	10,07619	9,88425	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

50°

40°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,80807	9,92381	10,07619	9,88425	60
1	9,80822	9,92407	10,07593	9,88415	59
2	9,80837	9,92433	10,07567	9,88404	58
3	9,80852	9,92458	10,07542	9,88394	57
4	9,80867	9,92484	10,07516	9,88383	56
5	9,80882	9,92510	10,07490	9,88372	55
6	9,80897	9,92535	10,07465	9,88362	54
7	9,80912	9,92561	10,07439	9,88351	53
8	9,80927	9,92587	10,07413	9,88340	52
9	9,80942	9,92612	10,07388	9,88330	51
10	9,80957	9,92638	10,07362	9,88319	50
11	9,80972	9,92663	10 07337	9,88308	49
12	9,80987	9,92689	10,07311	9,88298	48
13	9,81002	9,92715	10,07285	9,88287	47
14	9,81017	9,92740	10 07260	9,88276	46
15	9,81032	9,92766	10,07234	9,88266	45
16	9,81047	9,92792	10,07208	9,88255	44
17	9,81061	9,92817	10,07183	9,88244	43
18	9,81076	9,92843	10,07157	9,88234	42
19	9,81091	9,92868	10,07132	9,88223	41
20	9,81106	9,92894	10,07106	9,88212	40
21	9,81121	9,92920	10,07080	9,88201	39
22	9,81136	9,92945	10,07055	9,88191	38
23	9,81151	9,92971	10,07029	9,88180	37
24	9,81166	9,92996	10,07004	9,88169	36
25	9,81180	9,93022	10,06978	9,88158	35
26	9,81195	9,93048	10,06952	9,88148	34
27	9,81210	9,93073	10,06927	9,88137	33
28	9,81225	9,93099	10,06901	9,88126	32
29	9,81240	9,93124	10,06876	9,88115	31
30	9,81254	9,93150	10,06850	9,88105	30
Min	Coseno	Cotg.	Tang.	Seno.	Min.

49°

40°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,81254	9,93150	10,06850	9,88105	30
31	9,81269	9,93175	10,06825	9,88094	29
32	9,81284	9,93201	10,06799	9,88083	28
33	9,81299	9,93227	10,06773	9,88072	27
34	9,81314	9,93252	10,06748	9,88061	26
35	9,81328	9,93278	10,06722	9,88051	25
36	9,81343	9,93303	10,06697	9,88040	24
37	9,81358	9,93329	10,06671	9,88029	23
38	9,81372	9,93354	10,06646	9,88018	22
39	9,81387	9,93380	10,06620	9,88007	21
40	9,81402	9,93406	10,06594	9,87996	20
41	9,81417	9,93431	10,06569	9,87985	19
42	9,81431	9,93457	10,06543	9,87975	18
43	9,81446	9,93482	10,06518	9,87964	17
44	9,81461	9,93508	10,06492	9,87953	16
45	9,81475	9,93533	10,06467	9,87942	15
46	9,81490	9,93559	10,06441	9,87931	14
47	9,81505	9,93584	10,06416	9,87920	13
48	9,81519	9,93610	10,06390	9,87909	12
49	9,81534	9,93636	10,06364	9,87898	11
50	9,81549	9,93661	10,06339	9,87887	10
51	9,81563	9,93687	10,06313	9,87877	9
52	9,81578	9,93712	10,06288	9,87866	8
53	9,81592	9,93738	10,06262	9,87855	7
54	9,81607	9,93763	10,06237	9,87844	6
55	9,91622	9,93789	10,06211	9,87833	5
56	9,81636	9,93814	10,06186	9,87822	4
57	9,81651	9,93840	10,06160	9,87811	3
58	9,81665	9,93865	10,06135	9,87800	2
59	9,81680	9,93891	10,06109	9,87789	1
60	9,81694	9,93916	10,06084	9,87778	0
Min	Coseno	Cotg.	Tang.	Seno.	Min

49°

41°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,81694	9,93916	10,06084	9,87778	60
1	9,81709	9,93942	10,06058	9,87767	59
2	9,81723	9,93967	10,06033	9,87756	58
3	9,81738	9,93993	10,06007	9,87745	57
4	9,81752	9,94018	10,05982	9,87734	56
5	9,81767	9,94044	10,05956	9,87723	55
6	9,81781	9,94069	10,05931	9,87712	54
7	9,81796	9,94095	10,05905	9,87701	53
8	9,81810	9,94120	10,05880	9,87690	52
9	9,81825	9,94146	10,05854	9,87679	51
10	9,81839	9,94171	10,05829	9,87668	50
11	9,81854	9,94197	10,05803	9,87657	49
12	9,81868	9,94222	10,05778	9,87646	48
13	9,81882	9,94248	10,05752	9,87635	47
14	9,81897	9,94273	10,05727	9,87624	46
15	9,81911	9,94299	10,05701	9,87613	45
16	9,81926	9,94324	10,05676	9,87601	44
17	9,81940	9,94350	10,05650	9,87590	43
18	9,81955	9,94375	10,05625	9,87579	42
19	9,81969	9,94401	10,05599	9,87568	41
20	9,81983	9,94426	10,05574	9,87557	40
21	9,81998	9,94452	10,05548	9,87546	39
22	9,82012	9,94477	10,05523	9,87535	38
23	9,82026	9,94503	10,05497	9,87524	37
24	9,82041	9,94528	10,05472	9,87513	36
25	9,82055	9,94554	10,05446	9,87501	35
26	9,82069	9,94579	10,05421	9,87490	34
27	9,82084	9,94604	10,05396	9,87479	33
28	9,82098	9,94630	10,05370	9,87468	32
29	9,82112	9,94655	10,05345	9,87457	31
30	9,82126	9,94681	10,05319	9,87446	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

48°

41°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,82126	9,94681	10,05319	9,87446	30
31	9,82141	9,94706	10,05294	9,87434	29
32	9,82155	9,94732	10,05268	9,87423	28
33	9,82169	9,94757	10,05243	9,87412	27
34	9,82184	9,94783	10,05217	9,87401	26
35	9,82198	9,94808	10,05192	9,87390	25
36	9,82212	9,94834	10,05166	9,87378	24
37	9,82226	9,94859	10,05141	9,87367	23
38	9,82240	9 94884	10,05116	9,87356	22
39	9,82255	9,94910	10,05090	9,87345	21
40	9,82269	9,94935	10,05065	9,87334	20
41	9,82283	9,94961	10,05039	9,87322	19
42	9,82297	9,94986	10,05014	9,87311	18
43	9,82311	9,95012	10,04988	9,87300	17
44	9,82326	9,95037	10,04963	9,87288	16
45	9,82340	9,95062	10,04938	9,87277	15
46	9,82354	9,95088	10,04912	9,87266	14
47	9,82368	9,95113	10,04887	9,87255	13
48	9,82382	9,95139	10,04861	9,87243	12
49	9,82396	9,95164	10,04836	9,87232	11
50	9,82410	9,95190	10,04810	9,87221	10
51	9,82424	9,95215	10,04785	9,87209	9
52	9,82439	9,95240	10,04760	9,87198	8
53	9,82453	9,95266	10,04734	9,87187	7
54	9,82467	9,95291	10,04709	9,87175	6
55	9,82481	9,95317	10,04683	9,87164	5
56	9,82495	9,95342	10,04658	9,87153	4
57	9,82509	9,95368	10,04632	9,87141	3
58	9,82523	9,95393	10,04607	9,87130	2
59	9,82537	9,95418	10,04582	9,87119	1
60	9,82551	9,95444	10,04556	9,87107	0
Min	Coseno	Cotg.	Tang.	Seno.	Min

48°

42°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,82551	9,95444	10,04556	9,87107	60
1	9,82565	9,95469	10,04531	9,87096	59
2	9,82579	9,95495	10,04505	9,87085	58
3	9,82593	9,95520	10,04480	9,87073	57
4	9,82607	9,95545	10,04455	9,87062	56
5	9,82621	9,95571	10,04429	9,87050	55
6	9,82635	9,95596	10,04404	9,87039	54
7	9,82649	9,95622	10,04378	9,87028	53
8	9,82663	9,95647	10,04353	9,87016	52
9	9,82677	9,95672	10,04328	9,87005	51
10	9,82691	9,95698	10,04302	9,86993	50
11	9,82705	9,95723	10,04277	9,86982	49
12	9,82719	9,95748	10,04252	9,86970	48
13	9,82733	9,95774	10,04226	9,86959	47
14	9,82747	9,95799	10,04201	9,86947	46
15	9,82761	9,95825	10,04175	9,86936	45
16	9,82775	9,95850	10,04150	9,86924	44
17	9,82788	9,95875	10,04125	9,86913	43
18	9,82802	9,95901	10,04099	9,86902	42
19	9,82816	9,95926	10,04074	9,86890	41
20	9,82830	9,95952	10,04048	9,86879	40
21	9,82844	9,95977	10,04023	9,86867	39
22	9,82858	9,96002	10,03998	9,86855	38
23	9,82872	9,96028	10,03972	9,86844	37
24	9,82885	9,96053	10,03947	9,86832	36
25	9,82899	9,96078	10,03922	9,86821	35
26	9,82913	9,96104	10,03896	9,86809	34
27	9,82927	9,96129	10,03871	9,86798	33
28	9,82941	9,96155	10,03845	9,86786	32
29	9,82955	9,96180	10,03820	9,86775	31
30	9,82968	9,96205	10,03795	9,86763	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

47°

42°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,82968	9,96205	10,03795	9,86763	30
31	9,82982	9,96231	10,03769	9,86752	29
32	9,82996	9,96256	10,03744	9,86740	28
33	9,83010	9,96281	10,03719	9,86728	27
34	9,83023	9,96307	10,03693	9,86717	26
35	9,83037	9,96332	10,03668	9,86705	25
36	9,83051	9,96357	10,03643	9,86694	24
37	9,83065	9,96383	10,03617	9,86682	23
38	9,83078	9,96408	10,03592	9,86670	22
39	9,83092	9,96433	10,03567	9,86659	21
40	9,83106	9,96459	10,03541	9,86647	20
41	9,83120	9,96484	10,03516	9,86635	19
42	9,83133	9,96510	10,03490	9,86624	18
43	9,83147	9,96535	10,03465	9,86612	17
44	9,83161	9,96560	10,03440	9,86600	16
45	9,83174	9,96586	10,03414	9,86589	15
46	9,83188	9,96611	10,03389	9,86577	14
47	9,83202	9,96636	10,03364	9,86565	13
48	9,83215	9,96662	10,03338	9,86554	12
49	9,83229	9,96687	10,03313	9,86542	11
50	9,83242	9,96712	10,03288	9,86530	10
51	9,83256	9,96738	10,03262	9,86518	9
52	9,83270	9,96763	10,03237	9,86507	8
53	9,83283	9,96788	10,03212	9,86495	7
54	9,83297	9,96814	10,03186	9,86483	6
55	9,83310	9,96839	10,03161	9,86472	5
56	9,83324	9,96864	10,03136	9,86460	4
57	9,83338	9,96890	10,03110	9,86448	3
58	9,83351	9,96915	10,03085	9,86436	2
59	9,83365	9,96940	10,03060	9,86425	1
60	9,83378	9,96966	10,03034	9,86413	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

47°

43°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,83378	9,96966	10,03034	9,86413	60
1	9,83392	9,96991	10,03009	9,86401	59
2	9,83405	9,97016	10,02984	9,86389	58
3	9,83419	9,97042	10,02958	9,86377	57
4	9,83432	9,97067	10,02933	9,86366	56
5	9,83446	9,97092	10,02908	9,86354	55
6	9,83459	9,97118	10,02882	9,86342	54
7	9,83473	9,97143	10,02857	9,86330	53
8	9,83486	9,97168	10,02832	9,86318	52
9	9,83500	9,97193	10,02807	9,86306	51
10	9,83513	9,97219	10,02781	9,86295	50
11	9 83527	9,97244	10,02756	9,86283	49
12	9,83540	9,97269	10,02731	9,86271	48
13	9,83554	9,97295	10,02705	9,86259	47
14	9,83567	9,97320	10,02680	9,86247	46
15	9,83581	9,97345	10 02655	9,86235	45
16	9,83594	9,97371	10,02629	9,86223	44
17	9,83608	9,97396	10,02604	9,86211	43
18	9,83621	9,97421	10,02579	9,86200	42
19	9,83634	9,97447	10,02553	9,86188	41
20	9,83648	9,97472	10,02528	9,86176	40
21	9,83661	9,97497	10,02503	9,86164	39
22	9,83674	9,97523	10,02477	9,86152	38
23	9,83688	9,97548	10,02452	9,86140	37
24	9,83701	9,97573	10,02427	9,86128	36
25	9,83715	9,97598	10,02402	9,86116	35
26	9,83728	9,97624	10,02376	9,86104	34
27	9,83741	9,97649	10,02351	9,86092	33
28	9,83755	9,97674	10,02326	9,86080	32
29	9,83768	9,97700	10,02300	9,86068	31
30	9,83781	9,97725	10,02275	9,86056	30
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

46°

43°

Min	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,83781	9,97725	10,02275	9 86056	30
31	9,83795	9,97750	10,02250	9,86044	29
32	9,83808	9,97776	10,02224	9,86032	28
33	9,83821	9,97801	10,02199	9,86020	27
34	9,83834	9,97826	10,02174	9,86008	26
35	9,83848	9,97851	10,02149	9,85996	25
36	9,83861	9,97877	10,02123	9.85984	24
37	9,83874	9,97902	10,02098	9,85972	23
38	9,83887	9,97927	10,02073	9,85960	22
39	9,83901	9,97953	10,02047	9,85948	21
40	9,83914	9,97978	10,02022	9,85936	20
41	9,83927	9,98003	10,01997	9,85924	19
42	9,83940	9,98029	10,01971	9,85912	18
43	9,83954	9,98054	10,01946	9,85900	17
44	9,83967	9,98079	10,01921	9,85888	16
45	9,83980	9,98104	10,01896	9,85876	15
46	9,83993	9,98130	10,01870	9,85864	14
47	9,84006	9,98155	10,01845	9,85851	13
48	9,84020	9,98180	10,01820	9,85839	12
49	9,84033	9,98206	10,01794	9,85827	11
50	9,84046	9,98231	10,01769	9,85815	10
51	9,84059	9,98256	10,01744	9,85803	9
52	9,84072	9,98281	10,01719	9,85791	8
53	9,84085	9,98307	10,01693	9,85779	7
54	9,84098	9,98332	10,01668	9,85766	6
55	9,84112	9,98357	10,01643	9,85754	5
56	9,84125	9,98383	10,01617	9,85742	4
57	9,84138	9,98408	10,01592	9,85730	3
58	9,84151	9,98433	10,01567	9,85718	2
59	9,84164	9,98458	10,01542	9,85706	1
60	9,84177	9,98484	10,01516	9,85693	0
Min.	Coseno	Cotg.	Tang.	Seno.	Min.

46°

44°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
0	9,84177	9,98484	10,01516	9,85693	60
1	9,84190	9,98509	10,01491	9,85681	59
2	9,84203	9,98534	10,01466	9,85669	58
3	9,84216	9,98560	10,01440	9,85657	57
4	9,84229	9,98585	10,01415	9,85645	56
5	9,84242	9,98610	10,01390	9,85632	55
6	9,84255	9,98635	10,01365	9,85620	54
7	9,84269	9,98661	10,01339	9,85608	53
8	9,84282	9,98686	10,01314	9,85596	52
9	9,84295	9,98711	10,01289	9,85583	51
10	9,84308	9,98737	10,01263	9,85571	50
11	9,84321	9,98762	10 01238	9,85559	49
12	9,84334	9,98787	10,01213	9,85547	48
13	9,84347	9,98812	10,01188	9,85534	47
14	9,84360	9,98838	10,01162	9,85522	46
15	9,84373	9,98863	10,01137	9,85510	45
16	9,84385	9,98888	10,01112	9,85497	44
17	9,84398	9,98913	10,01087	9,85485	43
18	9,84411	9,98939	10,01061	9,85473	42
19	9,84424	9,98964	10,01036	9,85460	41
20	9,84437	9,98989	10,01011	9,85448	40
21	9,84450	9,99015	10,00985	9,85436	39
22	9,84463	9,99040	10,00960	9,85423	38
23	9,84476	9,99065	10,00935	9,85411	37
24	9,84489	9,99090	10,00910	9,85399	36
25	9,84502	9,99116	10,00884	9,85386	35
26	9,84515	9,99141	10,00859	9,85374	34
27	9,84528	9,99166	10,00834	9,85361	33
28	9,84540	9,99191	10,00809	9,85349	32
29	9,84553	9,99217	10,00783	9,85337	31
30	9,84566	9,99242	10,00758	9,85324	30
Min	Coseno	Cotg.	Tang.	Seno.	Min.

45°

44°

Min.	Seno.	Tang.	Cotg.	Coseno	Min.
30	9,84566	9,99242	10,00758	9,85324	30
31	9,84579	9,99267	10,00733	9,85312	29
32	9,84592	9,99293	10,00707	9,85299	28
33	9,84605	9,99318	10,00682	9,85287	27
34	9,84618	9,99343	10,00657	9,85274	26
35	9,84630	9,99368	10,00632	9,85262	25
36	9,84643	9,99394	10,00606	9,85250	24
37	9,84656	9,99419	10,00581	9,85237	23
38	9,84669	9,99444	10,00556	9,85225	22
39	9,84682	9,99469	10,00531	9,85212	21
40	9,84694	9,99495	10,00505	9,85200	20
41	9,84707	9,99520	10,00480	9,85187	19
42	9,84720	9,99545	10,00455	9,85175	18
43	9,84733	9,99570	10,00430	9,85162	17
44	9,84745	9,99596	10,00404	9,85150	16
45	9,84758	9,99621	10,00379	9,85137	15
46	9,84771	9,99646	10,00354	9,85125	14
47	9,84784	9,99672	10,00328	9,85112	13
48	9,84796	9,99697	10,00303	9,85100	12
49	9,84809	9,99722	10,00278	9,85087	11
50	9,84822	9,99747	10,00253	9,85074	10
51	9,84835	9,99773	10,00227	9,85062	9
52	9,84847	9,99798	10,00202	9,85049	8
53	9,84860	9,99823	10,00177	9,85037	7
54	9,84873	9,99848	10,00152	9,85024	6
55	9,84885	9,99874	10,00126	9,85012	5
56	9,84898	9,99899	10,00101	9,84999	4
57	9,84911	9,99924	10,00076	9,84986	3
58	9,84923	9,99949	10,00051	9,84974	2
59	9,84936	9,99975	10,00025	9,84961	1
60	9,84949	10,00000	10,00000	9,84949	0
Min	Coseno	Cotg.	Tang.	Seno.	Min.

45°

Min.	Seno.	tg. +	Coseno	Min.	Seno.	tg. +	Coseno
0	0,0000000	0	1,0000000	30	0,0087265	4	0,9999619
1	0,0002909	0	1,0000000	31	0,0090174	4	0,9999593
2	0,0005818	0	0,9999998	32	0,0093083	4	0,9999567
3	0,0008727	0	0,9999996	33	0,0095992	4	0,9999539
4	0,0011636	0	0,9999993	34	0,0098900	5	0,9999511
5	0,0014544	0	0,9999989	35	0,0101809	5	0,9999482
6	0,0017453	0	0,9999985	36	0,0104718	6	0,9999452
7	0,0020362	0	0,9999979	37	0,0107627	6	0,9999421
8	0,0023271	0	0,9999973	38	0,0110535	7	0,9999389
9	0,0026180	0	0,9999966	39	0,0113444	7	0,9999357
10	0,0029089	0	0,9999958	40	0,0116353	8	0,9999323
11	0,0031998	0	0,9999949	41	0,0119261	9	0,9999289
12	0,0034907	0	5,9999939	42	0,0122170	9	0,9999254
13	0,0037815	1	0,9999928	43	0,0125079	9	0,9999218
14	0,0040724	1	0,9999917	44	0,0127987	11	0,9999181
15	0,0043633	1	0,9999905	45	0,0130896	11	0,9999143
16	0,0046542	0	0,9999892	46	0,0133805	12	0,9999105
17	0,0049451	0	0,9999878	47	0,0136713	13	0,9999065
18	0 0052360	0	0,9999863	48	0,0139622	13	0,9999025
19	0,0055268	1	0,9999847	49	0,0142530	15	0,9998984
20	0,0058177	1	0,9999831	50	0,0145439	15	0,9998942
21	0,0061086	1	0,9999813	51	0,0148348	16	0,9998900
22	0,0063995	1	0,9999795	52	0,0151256	17	0,9998856
23	0,0066904	1	0,9999776	53	0,0154165	18	0,9998812
24	0,0069813	1	0,9999756	54	0,0157073	20	0,9998766
25	0,0072721	2	0,9999736	55	0,0159982	20	0,9998720
26	0,0075630	2	0,9999714	56	0,0162890	22	0,9998673
27	0,0078539	2	0,9999692	57	0,0165799	22	0,9998625
28	0,0081448	2	0,9999668	58	0,0168707	24	0,9998577
29	0,0084357	3	0,9999644	59	0,0171616	25	0,9998527
30	0,0087265	4	0,9999619	60	0,0174524	27	0,9998477

C. Arturo Martinez

DE LA CONSTRUCCION Y USO

DE LAS TABLAS.

TABLA I.

Los logarifmos de Briggs para los números naturales.

§ I.

La construccion de la tabla que se halla en la página 1ª no necesita de explicacion.

Se hallan en esta tabla los logaritmos de todos los números desde 1 hasta 100; bajo de N el número, y bajo de L el logaritmo correspondiente.

Así tenemos v. gr. que el log de 56=1.74819.

En la página 2 empieza la otra construccion que continúa hasta el fin y cuya explicacion es como sigue:

Como la característica se puede hallar por la regla siguiente es inútil que la den las tablas.

He aquí la regla.

Número	*Caracteristica*
para las unidades	0
para las decenas	1
para las centenas	2
para las unidades de millar	3
&a. y	

para las décimas —1
para las centésimas —2
para las milésimas —3
&a.

Segun la regla el número tendrá por característica tantas unidades como cifras ménos una tiene el número propuesto; tratándose de quebrados será la característica —1 si hay decenas,—2 si hay solo centenas y ninguna decena. Siendo la característica negativa, esta se pone atras de la mantisa y delante se escribe un cero. Así será

log 56 = 1.74819 pág. 1
log 5600 = 3.74819 pág. 15
log 0.056 = 0.74819—2 pág. 1

La misma regla vale para poder encontrar la posicion del punto decimal en el número siendo dada la característica del logaritmo.

§ 2.

Problema. Encontrar el logaritmo para un número dado.

Resolucion. 1) El número dado tenga tres cifras. Se buscará el número en la tabla debajo de N, al lado en la misma línea horizontal se encuentran las primeras dos cifras y debajo de 0 en la misma línea las otras tres. Si las dos primeras cifras del logaritmo correspondiente al número dado no estuvieran inmediatas á ese se toman las que estan encima.

Así tenemos por ejemplo:

log 155 = 2.18033	pág. 3
log 215 = 2.33244	pág. 5
log 397 = 2.59879	pág. 10
log 887 = 2.94793	pág. 24

2) Tenga el número cuatro cifras. Las tres primeras cifras se buscarán como ántes debajo de N, la cuarta en la línea horizontal que está encima y debajo

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

En la línea horizontal de las tres primeras cifras del número se toman las dos primeras del logaritmo y siguiendo la misma línea horizontal hasta llegar á la columna vertical sobre la cual está la cuarta del número se toman las otras tres del logaritmo. En caso de que las tres últimas cifras estuvieran marcadas con una estrella (*) se deberán tomar las dos primeras cifras de la mantisa no segun la indicacion de arriba encima de la línea horizontal, sino debajo de la misma línea.

Así tenemos

log 3178 = 3,50215	pág. 8
log 3213 = 3,50691	pág. 8
log 3237 = 3,51014	pág. 8

3) Tenga el número de que se trata cinco cifras. Encontraremos el logaritmo para las cuatro primeras cifras como ántes. Buscando ahora el logaritmo para el número que es de la unidad mayor, restaremos estas dos para tener

la diferencia de logaritmos que corresponden á los dos números de cuatro cifras que difieren de una unidad ò á dos números de cinco cifras que difieren de diez, siendo el logaritmo en cuanto á su mantisa el mismo, aunque el número sea diez veces mayor. Esta diferencia logarítmica se multiplica por la quinta cifra dividiendo el resultado por diez y este último resultado se suma con el logaritmo encontrado para las primeras cuatro cifras del número.

Ejemplo: Se busca el logaritmo para

54263

log 54260 = 4.73448
log 54270 = 4.73456

Diferencia 8 lo que se multiplica por la última cifra 3

24 y esto dividido por diez da 2.4

luego log 54263 = 4.73448
+ 2.4
= 4.73450

en donde se deshecha el 4 del quebrado por ser ménos que la mitad.

Así tenemos:

$$\log 23546 = 4.37181 + \frac{18 \times 6}{10} = 4.37191$$

$$\log\ 32784 = 4.51561 + \frac{13 \times 4}{10}$$
$$= 4.51566$$

$$\log\ 40943 = 4.61215 + \frac{10 \times 3}{10}$$
$$= 4.61218$$

4) Teniendo el número 6 cifras se hace el cálculo respecto de las 5 primeras como antes. Para la resta que tiene que considerarse como centésimas respecto de la cuarta de la misma manera que se consideró la quinta como décimas, se tomará la misma diferencia multiplicándola por la sesta cifra y dividiéndola por 100.

Así será

$$\log\ 325463 = 5.51242 + \frac{13 \times 6}{10} + \frac{13 \times 3}{100}$$
$$= 5.51242 + 7.8 + 0.39$$
$$5.51250.19$$
$$= 5.51250$$

$$\log 383476 = 5.58365 + \frac{12 \times 7}{10} + \frac{12 \times 6}{10}$$

$$= 5.58365 + 8.4 + 72$$

$$5.58374.12$$

$$= 5.58374$$

Si el número tiene 7 ó mas cifras se encuentra el logaritmo de la manera arriba indicada considerando la séptima cifra como milésimas de la cuarta &c.

§ 3.

Problema. Dado el logaritmo encontrar el número que le corresponde,

Resolucion. Se buscan las dos primeras cifras de la mantisa debajo de L y las otras tres en una de las columnas verticales que llevan arriba y abajo los números

0 1 2 3 4 5 6 7 8 9

Estando unidas estas tres cifras con las dos primeras hay que observar bien lo que se dijo ántes respecto de las estrellas (*)

Hallándose la mantisa con todas sus cifras exactamente en la tabla se tomarán debajo de

N las tres primeras cifras del número correspondientes á la misma línea horizontal en que se han encontrado las tres últimas cifras de la mantisa y la cuarta en la columna vertical que corresponde á las tres últimas cifras de la mantisa. La característica dará segun lo explicado ántes los enteros. Así tendremos

$$0,49150 = \log 3,101$$
$$2.59461 = \log 393,2$$
$$5.69329 = \log 493500$$

Si la mantisa no se encontrara exactamente en la tabla se toma la que precede imediatamente es decir la que es menor que la dada y para aquella se buscan como ántes las cuatro primeras cifras del número.

Despues se toma la diferencia que hay entre el logaritmo menor y el logaritmo dado, la cual se multiplica por diez. Este producto se divide por la diferencia que hay entre el logaritmo menor y aquel que sigue imediatamente poniendo el resultado como quinta cifra. Continuando esta division seguirá la sesta cifra &a.

Ejemplo. Sea dado como logaritmo.

0.51764

Este logaritmo no se encuentra en la tabla. Por tanto se toma aquel que inmediatamente precede es decir

0.51759

al cual corresponde el número

3,293

La diferencia del logaritmo dado á este último es 5 de la última decimal y la diferencia entre los dos logaritmos imediatos es 13.

Multiplicando 5 por 10 y dividiendo por 13 resulta 50:13 = 3 como quinta cifra del número y continuando la division

$$\begin{array}{l} 50:13 = 3 \\ 39 \\ \hline 110:13 = 8 \end{array}$$

resulta 8 como sesta cifra y así en adelante de manera que el número que corresponde á 0,51764 como logaritmo será

3,29338.

Sea el logaritmo

3.68596		log menor	68592
Diferencia	4	log mayor	68601
		Diferencia	9

$$\begin{array}{l} 40:9 = 44 \\ 36 \\ \hline 40 \\ 36 \\ \hline \end{array}$$

Número primero 4852
al que se suma 44

4852,44

TABLA II.

Los valores naturales de las funciones trigonométricas para los ángulos del primer cuadrante de 15 á 15 minutos.

§ 4.

En esta tabla se encuentran los ángulos de 0° á 45° en la columna de la izquierda debajo de la inscripcion de *grado*. Estos ángulos aumentan de arriba hácia abajo y á ellos corresponden las funciones indicadas en la línea horizontal arriba.

Seno, Coseno, Tangente, Cotangente.

Los ángulos de 45° á 90° se encuentran en la columna de la derecha, los cuales aumentan en órden inverso desde abajo hácia árriba. Á estos ángulos corresponden las funciones puestas en la línea horizontal inferior.

Coseno, Seno, Cotangente, Tangente.

§ 5.

Problema. Encontrar la funcion trigonométrica para un ángulo dado.

Resolucion. Si el ángulo está dado exactamente en grados y cuartos de grado se encontrará la funcion respectiva directamente en la tabla. Basta fijarse en las inscripciones para no cambiarlas.

Así tendremos:

sen. 5° 45′ = 0,10019
tang. 68° 45′ = 2,57150
cos. 39° 30′ = 0,77162

2) Si el ángulo no está dado en grados y cuartos de grado sino en minutos que difieren del cuarto, estará contenido entre dos de estos cuartos de grado, el uno menor y el otro mayor.

De la tabla se tomará la funcion que corresponda al ángulo inmediato menor de aquel que tenemos.

Restando ahora esa funcion de la que sigue inmediatamente resultará la diferencia que corresponde á 15 minutos. Dividiéndola por tanto por quince y multiplicando este resultado por el número de minutos que resulta restando los grados y minutos de la tabla de aquellos que están dados, tendremos la cantidad que hay que sumar con las últimas cifras de la funcion que se halla segun la manera arriba indicada.

Ejemplo. Se busca el seno para 8° 21′

Tendremos sen. 8° 15′ = 0.14349
sen. 8° 30′ = 0.14781

Diferencia = 432
la que dividida por 15 es = 28.8
y multiplicada por 6 = 172.8

Se tomará en lugar de este resultado 173 aña-

diéndolo al primer logaritmo de manera que

$$\text{sen. } 8^\circ\ 21' = 0.14349$$
$$+173$$
$$= 0.14522$$

Si hubiera todavia segundos, estos debian cambiarse en fraccion de minuto siguiendo por lo demas el método de arriba, aunque la tabla no dará bastante precision para segundos.

Búsquese cos. 18° 26′
cos. 18° 15′ = 0.94970
cos. 18° 30′ = 0.94832

Diferencia = 138

Esta diferencia dividida por 15 da 9,2
Multiplicando esto por 11 resulta 101,2

Este número se resta del primero de arriba por la razon que la funcion del coseno va disminuyendo con el aumento del ángulo y tendremos

$$\text{Cos } 18^\circ\ 26' = 0.94869$$

§ 6.

Problema. Se busca para una funcion trigonométrica el ángulo correspondiente.

Resolucion. 1. Debajo ó encima de la funcion respectiva que se ha dado se busca en la misma columna vertical el número dado. En caso

que se encuentre exactamente se toma al lado en la misma línea horizontal el ángulo correspondiente teniendo cuidado de tomar el ángulo á la izquierda si la funcion ha sido tomada debajo de la inscripcion y á la derecha si ha sido tomada encima.

Ejemplo.

Sea el seno	=	0.32969
será el ángulo	=	19° 15′
Sea el coseno	=	0.68518
será el ángulo	=	46° 45
Sea la tangente	=	0.17633
será el ángulo	=	10° 0′

2) Si la funcion trigonométrica no se encontrase exactamente en la tabla, entónces estará contenida entre la inmediata mayor y la inmediata menor del mismo nombre, las cuales corresponderá á dos ángulos que difieren de 15 minutos.

En la tabla se tomará el ángulo que corresponda á aquella funcion que precede inmediatamente.

Restando ahora esa funcion de la que está dada y despues de la que le sigue inmediatamente resultarán dos diferencias de las cuales la última corresponde á 15 minutos. Dividiéndola por tanto por quince y dividiendo este resultado por la primera diferencia resultará el número de unidades que habrá que añadir al primer resultado en caso de que resultara una fraccion de minuto se verá si es mayor ó menor que 0,5; en el primer caso se toma como minuto entero, en el otro se deja al lado. De es-

ta manera pudieran encontrarse tambien los segundos ademas de los minutos enteros pero con poca ó ninguna precision.

Ejemplo.

Sea dada la tangente = 0.23479

Tendremos para 0.23087 el ángulo 13° 0′

y para 0.23547 el ángulo 13° 15′

Diferencia para 15′ 460

Diferedcia para 1′ 30.7

Dividiendo esto en 392

resulta 13′.79

ó mas bien 14′

los que añadiremos á 13° 0′ y

tendremos para tangente = 0.23479

el ángulo será 13° 14′

Sea el seno = 0.64782

0.64612 = sen 40° 15′

Difer.333:15=22.2

170:22.2=7.6

155.4

146

luego 0·64782 = sen 40° 23′

Sea el cosen. = 0.65843

0.65935 = cosen. 48° 45′

Difer. 329:15=21.9

92:21.9=4.2

87.6

44

luego 0.65843=cosen. 48° 49′

TABLA III.

Los logaritmos de las funciones trigonométricas para los ángulos del primer cuadrante de minuto en minuto.

§ 7.

En esta tabla se encuentran como en la anterior los ángulos de 0° á 45° en la columna de la izquierda de arriba hácia abajo y las de 45° á 90° de la derecha desde abajo hácia arriba. Al lado de cada ángulo están los logaritmos de las funciones cuyos nombres se encuentran arriba y abajo como sigue:

seno, tangente. cotangente. coseno.

y coseno, cotangente, tangente, seno.

La primera serie horizontal pertenece á los ángulos de 0° á 45° que se toman á la izquierda, la segunda á los ángulos de 45° á 90° que se toman á la derecha. Ademas hay que observar que á todos los logaritmos de las funciones que tuvieran una característica negativa, hay que añadir la característica — 10 al fin, lo que vale.

para el log. sen. de 0° hasta 89° 43′
para el log. cosen. de 0° 17′ hasta 90°
para el log. tang. de 0° hasta 44° 59′
para el log. cotg. de 45° 1′ hasta 90°.

§ 8.

Problema. Hallar el logaritmo de una funcion trigonométrica correspondiente á un ángulo dado

Resolucion. 1) Si el ángulo no tiene mas que grados y minutos entónces se le encuentra directamente en la tabla y en la línea horizontal se halla debajo de la funcion respectiva el logaritmo de la funcion.

Ejemplo.

log. sen. $32°28' = 9.72982 - 10$
log. tang. $62°23' = 0.28137.$

2) Si el ángulo ademas de los minutos tiene segundos se encontrarán en la tabla solo los minutos. En la línea horizontal de los minutos se toma la funcion respectiva.

Restando esta funcion de la que corresponde al ángulo de un minuto próximo mayor tendremos la diferencia que corresponde á 60 segundos. Esta diferencia se divide por 60 y se multiplica por el número de segundos que tiene el ángulo. El resultado se suma con la funcion que se encontró, ó se resta segun que la funcion aumenta ó disminuye. Tratándose de partes de segundos puede emplearse el mismo método, aunque generalmente no ha de haber cambio en la funcion por partes de segundos.

Ejemplo. Se busca log. sen. 15° 18′ 34″

Tenemos

log. sen. 15° 18′ = 9.42140
log. sen. 15° 19′ = 9.42186

Difer. 46 : 60 = 0.767

34

3068
2301

26.078

luego log. sen. 15° 18′ 34″ = 9.42166

log. cosen. 67° 40′ 22″
log. cosen. 67° 40 =9·57978
log. cosen. 67° 41 =9.57947

Difer. 31:60=0.5017
22

10034
10034

11.0374

luego log. cosen. 67° 40′ 22″ =9.57967

log. tang. 28° 54′ 19″
log. tang. 28° 54′=974196
log. tang. 28° 55′=9.74226

30:60 = 0.5
19

45
5

9,5

luego log. tang. 28° 54′ 19″ = 9.74203

En caso de que el ángulo dado fuera ménor que 2° la Interpolacion arriba indicada no dará valores bastante precisos para log. sen. y log. tang.

Será entónces ventajoso hacer uso de las fórmulas de Maskelyne.

$$\log . \text{sen. } \alpha = \log \alpha - \tfrac{1}{3} \text{ C log cos } \alpha$$
$$\log \text{tang } \alpha = \log \alpha + \tfrac{2}{3} \text{ C log cos } \alpha$$

donde log α significa el log. del arco que corresponde al ángulo dado para el radio igual á la unidad y C. log. cos. será el complemento del log. cos. α, es decir la cantidad que necesita sumar con ese logaritmo para que resulte 10.

Para encontrar el log α se reduce el ángulo á segundos y tomando el logaritmo del número que así resulta se le suma con el logaritmo 4,68557—10, es decir el complemento del logaritmo del radio dado en segundos.

Ejemplo.

	$1^\circ\ 12'\ 37'' = 4357''$	
	log 4537	= 3.63919
	C. log r	= 4.68557—10
Suma	log α	= 8.32476—10
Ademas	log cos α	= 9.99990—10
	C. log cos α	= 0.00010
	$\frac{1}{3}$ C. log cos α	= 0.00003

Restando este número del de arriba resulta

$$\log \text{ sen } \alpha = 8{,}32473—10$$

Así mismo se encuentra el logaritmo de la tangente.

Problema: Hallar el ángulo que corresponde al logaritmo de una funcion trigonométrica.

Resolucion. Si el logaritmo de la funcion se encuentra exactamente en la tabla se toman en la misma línea horizontal los minutos. Estos se encuentran á la izquierda ó á la derecha

segun que la funcion se halla en la línea horizontal de arriba ó de abajo.

Segun la misma indicacion se tomarán los grados correspondientes á la parte superior de la llana.

Así tenemos para log sen. = 9.74719—10

el ángulo 33° 58′

log. cos. = 964519—10

el ángulo 63° 47′

Para log. tang. = 9.89541—10

el ángulo 38° 10′

Si la funcion no se hallare exactamente en la tabla se toma segun la manera arriba indicada el ángulo inmediato menor. En seguida se buscan dos diferencias la una entre esta funcion y la que pertenece al ángulo de un minuto próximo mayor y la otra entre esa misma funcion y la que se dió. La primera de estas diferencias pertenece á 60 segundos y por tanto hay que dividirla por 60 para saber la cantidad que corresponde á un segundo. Por este resultado se divide la segunda diferencia para obtener el número de segundos que habrá que añadir á los grados y minutos ya encontrados. Habrá que tener mucho cuidado para no equivocarse siendo así que no siempre el aumento ó la diminucion de la funcion corresponde tambien á un aumento ó diminucion del ángulo.

Ejemplo. Se da log. sen = 9.28153

Tenemos:

9.28125 = log. sen. 11° 1′ 9.28125
9.28190 = log. sen. 11° 2′ 9.28153

65:60 = 1.08
60

50
0

500

28:1.08=25.9
21.6

64
540

1000
972

28

Luego corresponde á log. sen = 9.28153
el ángulo 11° 1′ 25.″9

log tang. = 9.44266

9.44250 = log tang 15° 29′ | 9.44250
9.44299 = log tang 15° 30′ | 9.44266

49:60 = 0.82

16:0.82=19.5
082

780
738

420

Luego corresponde á log. tang. = 9.44266
el ángulo 15° 29′ 19″.5

En caso que el ángulo encontrado fuera menor que 2° habrá poca precision si las funciones dadas eran seno ó tangente. Fuera por tanto mejor en este caso emplear las ecuaciones de Maskelyne como se hizo arriba:

$$\log. \alpha = \log. \text{sen}. \alpha + \tfrac{1}{3} \text{C. log. cos. } \alpha$$

$$\log. \alpha = \log. \text{tang}. \alpha - \tfrac{2}{3} \text{C. log. cos. } \alpha$$

dondo las significaciones son las dichas. Para obtener el ángulo que se busca, al valor log α que resulta hay que sumarle el logaritmo constante 5.31443 es decir el logaritmo del arco que es igual al radio. El número que corresponde á esta suma como logoritmo es el ángulo buscado espresado en segundos.

Ejemplo. Sea log. sen. α =7.96706 — 10

$$\begin{aligned} \log. \text{cos. } \alpha &= 9.99998 - 10 \\ \text{C. log. cos. } \alpha &= 0.00002 \\ \tfrac{1}{3} \text{ C. log. cos. } \alpha &= 0.00001 \end{aligned}$$

Sumando este valor con log. sen. α resulta:

$$\begin{aligned} \log. \alpha &= 7.96707 - 10 \\ \log. \text{r} &= 5.31442 \\ \hline & 3.28150 \end{aligned}$$

El número respectivo es

$$1912'' = 0° 31' 52.''$$

Resta solo dar una explicacion de la última página de esta tabla III. en la cual encontramos las funciones de á 7 decimales para el seno, coseno y tangente. La razon porque se ha dado esta tabla es la que arriba se ha expuesto es decir la falta de precision en los ángulos pequeños en caso que no haya mas que cinco decimales. Por esto hay solo las funciones del primer grado dadas de minuto en minuto.

La primera columna vertical da los minutos, la segunda los senos que corresponden en la misma horizontal, la tercera tiene el aumento que hay que añadir á la séptima cifra decimal para tener la tangente, las otras cuatro que siguen tienen la misma construccion.

Así tenemos:

sen 0° 17′ = 0.0049451
tang 0° 26′ = 0.0075630
+ 2
= 0.0075632

cosen 0° 47′ = 0.9999065

FIN.