

## XX. Zamiana stopni, minut i sekund na radiany

stopnie	0°	1°	2°	3°	4°
0	0,00000 00000	0,01745 32925	0,03490 65850	0,05235 98776	0,06981 31701
1	0,17453 29252	0,19198 62177	0,20943 95102	0,22689 28028	0,24434 60953
2	0,34906 58504	0,36651 91429	0,38397 24354	0,40142 57280	0,41887 90205
3	0,52359 87756	0,54105 20681	0,55850 53606	0,57595 86532	0,59341 19457
4	0,69813 17008	0,71558 49933	0,73303 82858	0,75049 15784	0,76794 48709
5	0,87266 46260	0,89011 79185	0,90757 12110	0,92502 45036	0,94247 77961
6	1,04719 75512	1,06465 08437	1,08210 41362	1,09955 74288	1,11701 07213
7	1,22173 04764	1,23918 37689	1,25663 70614	1,27409 03540	1,29154 36465
8	1,39626 34016	1,41371 66941	1,43116 99866	1,44862 32792	1,46607 65717
9	1,57079 63268	1,58824 96193	1,60570 29118	1,62315 62044	1,64060 94969
10	1,74532 92520	1,76278 25445	1,78023 58370	1,79768 91296	1,81514 24221
11	1,91986 21772	1,93731 54697	1,95476 87622	1,97222 20548	1,98967 53473
12	2,09439 51024	2,11184 83949	2,12930 16874	2,14675 49800	2,16420 82725
13	2,26892 80276	2,28638 13201	2,30383 46126	2,32128 79052	2,33874 11977
14	2,44346 09528	2,46091 42453	2,47836 75378	2,49582 08304	2,51327 41229
15	2,61799 38780	2,63544 71705	2,65290 04630	2,67035 37556	2,68780 70481
16	2,79252 68032	2,80998 00957	2,82743 33882	2,84488 66808	2,86233 99733
17	2,96705 97284	2,98451 30209	3,00196 63134	3,01941 96060	3,03687 28985
18	3,14159 26536	3,15904 59461	3,17649 92386	3,19395 25311	3,21140 58237
19	3,31612 55788	3,33357 88713	3,35103 21638	3,36848 54563	3,38593 87489
20	3,49065 85040	3,50811 17965	3,52556 50890	3,54301 83815	3,56047 16741
21	3,66519 14292	3,68264 47217	3,70009 80142	3,71755 13067	3,73500 45993
22	3,83972 43544	3,85717 76469	3,87463 09394	3,89208 42319	3,90953 75245
23	4,01425 72796	4,03171 05721	4,04916 38646	4,06661 71571	4,08407 04497
24	4,18879 02048	4,20624 34973	4,22369 67898	4,24115 00823	4,25860 33749
25	4,36332 31300	4,38077 64225	4,39822 97150	4,41568 30075	4,43313 63001
26	4,53785 60552	4,55530 93477	4,57276 26402	4,59021 59327	4,60766 92253
27	4,71238 89804	4,72984 22729	4,74729 55654	4,76474 88579	4,78220 21505
28	4,88692 19056	4,90437 51981	4,92182 84906	4,93928 17831	4,95673 50757
29	5,06145 48308	5,07890 81233	5,09636 14158	5,11381 47083	5,13126 80009
30	5,23598 77560	5,25344 10485	5,27089 43410	5,28834 76335	5,30580 09261
31	5,41052 06812	5,42797 39737	5,44542 72662	5,46288 05587	5,48033 38513
32	5,58505 36064	5,60250 68989	5,61996 01914	5,63741 34839	5,65486 67765
33	5,75958 65316	5,77703 98241	5,79449 31166	5,81194 64091	5,82939 97017
34	5,93411 94568	5,95157 27493	5,96902 60418	5,98647 93343	6,00393 26269
35	6,10865 23820	6,12610 56745	6,14355 89670	6,16101 22595	6,17846 55521
36	6,28318 53072				

  

minuty	0'	1'	2'	3'	4'
0	0,00000 00000	0,00029 08882	0,00058 17764	0,00087 26646	0,00116 35528
1	0,00290 88821	0,00319 97703	0,00349 06585	0,00378 15467	0,00407 24349
2	0,00581 77642	0,00610 86524	0,00639 95406	0,00669 04288	0,00698 13170
3	0,00872 66463	0,00901 75345	0,00930 84227	0,00959 93109	0,00989 01991
4	0,01163 55283	0,01192 64166	0,01221 73048	0,01250 81930	0,01279 90812
5	0,01454 44104	0,01483 52986	0,01512 61869	0,01541 70751	0,01570 79633

  

sekundy	0"	1"	2"	3"	4"
0	0,00000 00000	0,00000 48481	0,00000 96963	0,00001 45444	0,00001 93925
1	0,00004 84814	0,00005 33295	0,00005 81776	0,00006 30258	0,00006 78739
2	0,00009 69627	0,00010 18109	0,00010 66590	0,00011 15071	0,00011 63553
3	0,00014 54441	0,00015 02922	0,00015 51404	0,00015 99885	0,00016 48367
4	0,00019 39255	0,00019 87736	0,00020 36217	0,00020 84699	0,00021 33180
5	0,00024 24068	0,00024 72550	0,00025 21031	0,00025 69513	0,00026 17994

Błąd przybliżeń podanych na str. 352 i 353 jest nie większy niż 0,00000 000005, a błąd przybliżenia obliczonego za pomocą tej tablicy jest mniejszy niż 0,00000 00001 56 + błąd zaokrąglenia wyniku.

Przykład. Aby obliczyć w radianach kąt  $29^{\circ}53'17",4694$ , odczytujemy w tablicy, że  $29^{\circ} \approx 0,50614 54831$ ,  $53' \approx 0,01541 70751$ ,  $17'' \approx 0,00008 24183$ , a ponadto  $0",4694 = 0,01 \cdot 47'' - 0,0001 \cdot 6'' \approx 0,00000 22786 24 - 0,00000 00029 0888 = 0,00000 22757 1512$ , skąd po zsumowaniu  $29^{\circ}53'17",4694 \approx 0,52164 72522 1512$  z dokładnością do 0,00000 00001 56, skąd  $29^{\circ}53'17",4694 \approx 0,52164 7252$  z dokładnością do 0,00000 00004.

## XX. Conversion of degrees, minutes and seconds to radians

5°	6°	7°	8°	9°	degrees	
0,08726 64626	0,10471 97551	0,12217 30476	0,13962 63402	0,15707 96327	0	
0,26179 93878	0,27925 26803	0,29670 59728	0,31415 92654	0,33161 25579	1	
0,43633 23130	0,45378 56055	0,47123 88980	0,48869 21906	0,50614 54831	2	
0,61086 52382	0,62831 85307	0,64577 18232	0,66322 51158	0,68067 84083	3	
0,78539 81634	0,80285 14559	0,82030 47484	0,83775 80410	0,85521 13335	4	
0,95993 10886	0,97738 43811	0,99483 76736	1,01229 09662	1,02974 42587	5	
1,13446 40138	1,15191 73063	1,16937 05988	1,18682 38914	1,20427 71839	6	° , ' , " → rad
1,30899 69390	1,32645 02315	1,34390 35240	1,36135 68166	1,37881 01091	7	
1,48352 98642	1,50098 31567	1,51843 64492	1,53588 97418	1,55334 30343	8	
1,65806 27894	1,67551 60819	1,69296 93744	1,71042 26670	1,72787 59595	9	
1,83259 57146	1,85004 90071	1,86750 22996	1,88495 55922	1,90240 88847	10	
2,00712 86398	2,02458 19323	2,04203 52248	2,05948 85174	2,07694 18099	11	
2,18166 15650	2,19911 48575	2,21656 81500	2,23402 14426	2,25147 47351	12	
2,35619 44902	2,37364 77827	2,39110 10752	2,40855 43678	2,42600 76603	13	
2,53072 74154	2,54818 07079	2,56563 40004	2,58308 72930	2,60054 05855	14	
2,70526 03406	2,72271 36331	2,74016 69256	2,75762 02182	2,77507 35107	15	
2,87979 32658	2,89724 65583	2,91469 98508	2,93215 31434	2,94960 64359	16	
3,05432 61910	3,07177 94835	3,08923 27760	3,10668 60685	3,12413 93611	17	
3,22885 91162	3,24631 24087	3,26376 57012	3,28121 89937	3,29867 22863	18	
3,40339 20414	3,42084 53339	3,43829 86264	3,45575 19189	3,47320 52115	19	
3,57792 49666	3,59537 82591	3,61283 15516	3,63028 48441	3,64773 81367	20	
3,75245 78918	3,76991 11843	3,78736 44768	3,80481 77693	3,82227 10619	21	
3,92699 08170	3,94444 41095	3,96189 74020	3,97935 06945	3,99680 39871	22	
4,10152 37422	4,11897 70347	4,13643 03272	4,15388 36197	4,17133 69123	23	
4,27605 66674	4,29350 99599	4,31096 32524	4,32841 65449	4,34586 98375	24	
4,45058 95926	4,46804 28851	4,48549 61776	4,50294 94701	4,52040 27627	25	
4,62512 25178	4,64257 58103	4,66002 91028	4,67748 23953	4,69493 56879	26	
4,79965 54430	4,81710 87355	4,83456 20280	4,85201 53205	4,86946 86131	27	
4,97418 83682	4,99164 16607	5,00909 49532	5,02654 82457	5,04400 15383	28	
5,14872 12934	5,16617 45859	5,18362 78784	5,20108 11709	5,21853 44635	29	
5,32325 42186	5,34070 75111	5,35816 08036	5,37561 40961	5,39306 73887	30	
5,49778 71438	5,51524 04363	5,53269 37288	5,55014 70213	5,56760 03139	31	
5,67232 00690	5,68977 33615	5,70722 66540	5,72467 99465	5,74213 32391	32	
5,84685 29942	5,86430 62867	5,88175 95792	5,89921 28717	5,91666 61643	33	
6,02138 59194	6,03883 92119	6,05629 25044	6,07374 57969	6,09119 90895	34	
6,19591 88446	6,21337 21371	6,23082 54296	6,24827 87221	6,26573 20147	35	
5'	6'	7'	8'	9'	minutes	
0,00145 44410	0,00174 53293	0,00203 62175	0,00232 71057	0,00261 79939	0	
0,00436 33231	0,00465 42113	0,00494 50995	0,00523 59878	0,00552 68760	1	
0,00727 22052	0,00756 30934	0,00785 39816	0,00814 48698	0,00843 57581	2	
0,01018 10873	0,01047 19755	0,01076 28637	0,01105 37519	0,01134 46401	3	
0,01308 99694	0,01338 08576	0,01367 17458	0,01396 26340	0,01425 35222	4	
0,01599 88515	0,01628 97397	0,01658 06279	0,01687 15161	0,01716 24043	5	
5"	6"	7"	8"	9"	seconds	
0,00002 42407	0,00002 90888	0,00003 39370	0,00003 87851	0,00004 36332	0	
0,00007 27221	0,00007 75702	0,00008 24183	0,00008 72665	0,00009 21146	1	
0,00012 12034	0,00012 60516	0,00013 08997	0,00013 57478	0,00014 05960	2	
0,00016 96848	0,00017 45329	0,00017 93811	0,00018 42292	0,00018 90773	3	
0,00021 81662	0,00022 30143	0,00022 78624	0,00023 27106	0,00023 75587	4	
0,00026 66475	0,00027 14957	0,00027 63438	0,00028 11919	0,00028 60401	5	

The error of the approximations given on pp. 352 and 353 is not greater than 0,00000 000005 and the error of an approximation found by means of this table is less than 0,00000 000001 56 + the error of rounding off the result.

**Example.** To give in radians the angle  $29^{\circ}53'17''$ ,  $4694$  we read in the table that  $29^{\circ} \approx 0,50614 54831$ ,  $53' \approx 0,01541 70751$ ,  $17'' \approx 0,00008 24183$  and moreover  $0'',4694 = 0,01 \cdot 47'' - 0,0001 \cdot 6'' \approx 0,00000 22786 24 - 0,00000 00029 0888 = 0,00000 22757 1512$ , whence after summing up  $29^{\circ}53'17'',4694 \approx 0,52164 72522 1512$  with error less than 0,00000 00001 56, whence  $29^{\circ}53'17'',4694 \approx 0,52164 7252$  with error less than 0,00000 00004.

## XXI. Zamiana radianów na stopnie, minuty i sekundy

radiany	0	1	2	3	4
0,0000	0°,0000	2°,0626	4°,1253	6°,1879	8°,2506
0,0001	20",6265	22",6891	24",7518	26",8144	28",8771
0,0002	41",2530	43",3156	45",3783	47",4409	49",5036
0,0003	1'01",8794	1'03",9421	1'06",0047	1'08",0674	1'10",1300
0,0004	1'22",5059	1'24",5686	1'26",6312	1'28",6939	1'30",7565
0,0005	1'43",1324	1'45",1951	1'47",2577	1'49",3203	1'51",3830
0,0006	2'03",7589	2'05",8215	2'07",8842	2'09",9468	2'12",0095
0,0007	2'24",3854	2'26",4480	2'28",5107	2'30",5733	2'32",6360
0,0008	2'45",0118	2'47",0745	2'49",1371	2'51",1998	2'53",2624
0,0009	3'05",6383	3'07",7010	3'09",7636	3'11",8263	3'13",8889
0,00	0°00'00",0000	0°03'26",2648	0°06'52",5296	0°10'18",7944	0°13'45",0592
0,01	0°34'22",6481	0°37'48",9129	0°41'15",1777	0°44'41",4425	0°48'07",7073
0,02	1°08'45",2961	1°12'11",5609	1°15'37",8257	1°19'04",0905	1°22'30",3553
0,03	1°43'07",9442	1°46'34",2090	1°50'00",4738	1°53'26",7386	1°56'53",0034
0,04	2°17'30",5922	2°20'56",8571	2°24'23",1219	2°27'49",3867	2°31'15",6515
0,05	2°51'53",2403	2°55'19",5051	2°58'45",7699	3°02'12",0347	3°05'38",2995
0,06	3°26'15",8884	3°29'42",1532	3°33'08",4180	3°36'34",6828	3°40'00",9476
0,07	4°00'38",5364	4°04'04",8012	4°07'31",0660	4°10'57",3309	4°14'23",5957
0,08	4°35'01",1845	4°38'27",4493	4°41'53",7141	4°45'19",9789	4°48'46",2437
0,09	5°09'23",8326	5°12'50",0974	5°16'16",3622	5°19'42",6270	5°23'08",8918
0,10	5°43'46",4806	5°47'12",7454	5°50'39",0102	5°54'05",2750	5°57'31",5398
0,11	6°18'09",1287	6°21'35",3935	6°25'01",6583	6°28'27",9231	6°31'54",1879
0,12	6°52'31",7767	6°55'58",0416	6°59'24",3064	7°02'50",5712	7°06'16",8360
0,13	7°26'54",4248	7°30'20",6896	7°33'46",9544	7°37'13",2192	7°40'39",4840
0,14	8°01'17",0729	8°04'43",3377	8°08'09",6025	8°11'35",8673	8°15'02",1321
0,15	8°35'39",7209	8°39'05",9857	8°42'32",2505	8°45'58",5154	8°49'24",7802
0,16	9°10'02",3690	9°13'28",6338	9°16'54",8986	9°20'21",1634	9°23'47",4282
0,17	9°44'25",0171	9°47'51",2819	9°51'17",5467	9°54'43",8115	9°58'10",0763
0,18	10°18'47",6651	10°22'13",9299	10°25'40",1947	10°29'06",4595	10°32'32",7243
0,19	10°53'10",3132	10°56'36",5780	11°00'02",8428	11°03'29",1076	11°06'55",3724
0,20	11°27'32",9612	11°30'59",2261	11°34'25",4909	11°37'51",7557	11°41'18",0205
0,21	12°01'55",6093	12°05'21",8741	12°08'48",1389	12°12'14",4037	12°15'40",6685
0,22	12°36'18",2574	12°39'44",5222	12°43'10",7870	12°46'37",0518	12°50'03",3166
0,23	13°10'40",9054	13°14'07",1702	13°17'33",4350	13°20'59",6999	13°24'25",9647
0,24	13°45'03",5535	13°48'29",8183	13°51'56",0831	13°55'22",3479	13°58'48",6127
0,25	14°19'26",2016	14°22'52",4664	14°26'18",7312	14°29'44",9960	14°33'11",2608
0,26	14°53'48",8496	14°57'15",1144	15°00'41",3792	15°04'07",6440	15°07'33",9088
0,27	15°28'11",4977	15°31'37",7625	15°35'04",0273	15°38'30",2921	15°41'56",5569
0,28	16°02'34",1457	16°06'00",4106	16°09'26",6754	16°12'52",9402	16°16'19",2050
0,29	16°36'56",7938	16°40'23",0586	16°43'49",3234	16°47'15",5882	16°50'41",8530
0,30	17°11'19",4419	17°14'45",7067	17°18'11",9715	17°21'38",2363	17°25'04",5011
0,31	17°45'42",0899	17°49'08",3547	17°52'34",6195	17°56'00",8844	17°59'27",1492
0,32	18°20'04",7380	18°23'31",0028	18°26'57",2676	18°30'23",5324	18°33'49",7972
0,33	18°54'27",3861	18°57'53",6509	19°01'19",9157	19°04'46",1805	19°08'12",4453
0,34	19°28'50",0341	19°32'16",2989	19°35'42",5637	19°39'08",8285	19°42'35",0933
0,35	20°03'12",6822	20°06'38",9470	20°10'05",2118	20°13'31",4766	20°16'57",7414
0,36	20°37'35",3302	20°41'01",5951	20°44'27",8599	20°47'54",1247	20°51'20",3895
0,37	21°11'57",9783	21°15'24",2431	21°18'50",5079	21°22'16",7727	21°25'43",0375
0,38	21°46'20",6264	21°49'46",8912	21°53'13",1560	21°56'39",4208	22°00'05",6856
0,39	22°20'43",2744	22°24'09",5392	22°27'35",8040	22°31'02",0689	22°34'28",3337

Błąd przybliżeń podanych na str. 354 i 355 jest nie większy niż 0",00005, a błąd przybliżenia obliczonego za pomocą tej tablicy jest mniejszy niż 0",000106 + błąd zaokrąglenia wyniku.

Przykład obliczenia na str. 360.

# XXI. Conversion of radians to degrees, minutes and seconds

5	6	7	8	9	radians	
10",3132	12",3759	14",4385	16",5012	18",5638	0,0000	
30",9397	33",0024	35",0650	37",1277	39",1903	0,0001	
51",5662	53",6288	55",6915	57",7541	59",8168	0,0002	
1'12",1927	1'14",2553	1'16",3180	1'18",3806	1'20",4433	0,0003	
1'32",8192	1'34",8818	1'36",9445	1'39",0071	1'41",0698	0,0004	
1'53",4456	1'55",5083	1'57",5709	1'59",6336	2'01",6962	0,0005	
2'14",0721	2'16",1348	2'18",1974	2'20",2601	2'22",3227	0,0006	
2'34",6986	2'36",7613	2'38",8239	2'40",8865	2'42",9492	0,0007	
2'55",3251	2'57",3877	2'59",4504	3'01",5130	3'03",5757	0,0008	
3'15",9516	3'18",0142	3'20",0769	3'22",1395	3'24",2022	0,0009	
0°17'11",3240	0°20'37",5888	0°24'03",8536	0°27'30",1184	0°30'56",3833	0,00	
0°51'33",9721	0°55'00",2369	0°58'26",5017	1°01'52",7665	1°05'19",0313	0,01	
1°25'56",6202	1°29'22",8850	1°32'49",1498	1°36'15",4146	1°39'41",6794	0,02	
2°00'19",2682	2°03'45",5330	2°07'11",7978	2°10'38",0626	2°14'04",3274	0,03	
2°34'41",9163	2°38'08",1811	2°41'34",4459	2°45'00",7107	2°48'26",9755	0,04	
3°09'04",5643	3°12'30",8291	3°15'57",0940	3°19'23",3588	3°22'49",6236	0,05	
3°43'27",2124	3°46'53",4772	3°50'19",7420	3°53'46",0068	3°57'12",2716	0,06	
4°17'49",8605	4°21'16",1253	4°24'42",3901	4°28'08",6549	4°31'34",9197	0,07	
4°52'12",5085	4°55'38",7733	4°59'05",0381	5°02'31",3029	5°05'57",5678	0,08	
5°26'35",1566	5°30'01",4214	5°33'27",6862	5°36'53",9510	5°40'20",2158	0,09	
6°00'57",8047	6°04'24",0695	6°07'50",3343	6°11'16",5991	6°14'42",8639	0,10	
6°35'20",4527	6°38'46",7175	6°42'12",9823	6°45'39",2471	6°49'05",5119	0,11	
7°09'43",1008	7°13'09",3656	7°16'35",6304	7°20'01",8952	7°23'28",1600	0,12	
7°44'05",7488	7°47'32",0136	7°50'58",2785	7°54'24",5433	7°57'50",8081	0,13	
8°18'28",3969	8°21'54",6617	8°25'20",9265	8°28'47",1913	8°32'13",4561	0,14	
8°52'51",0450	8°56'17",3098	8°59'43",5746	9°03'09",8394	9°06'36",1042	0,15	
9°27'13",6930	9°30'39",9578	9°34'06",2226	9°37'32",4874	9°40'58",7523	0,16	
10°01'36",3411	10°05'02",6059	10°08'28",8707	10°11'55",1355	10°15'21",4003	0,17	
10°35'58",9892	10°39'25",2540	10°42'51",5188	10°46'17",7836	10°49'44",0484	0,18	
11°10'21",6372	11°13'47",9020	11°17'14",1668	11°20'40",4316	11°24'06",6964	0,19	
11°44'44",2853	11°48'10",5501	11°51'36",8149	11°55'03",0797	11°58'29",3445	0,20	
12°19'06",9333	12°22'33",1981	12°25'59",4630	12°29'25",7278	12°32'51",9926	0,21	
12°53'29",5814	12°56'55",8462	13°00'22",1110	13°03'48",3758	13°07'14",6406	0,22	
13°27'52",2295	13°31'18",4943	13°34'44",7591	13°38'11",0239	13°41'37",2887	0,23	
14°02'14",8775	14°05'41",1423	14°09'07",4071	14°12'33",6719	14°15'59",9368	0,24	
14°36'37",5256	14°40'03",7904	14°43'30",0552	14°46'56",3200	14°50'22",5848	0,25	
15°11'00",1737	15°14'26",4385	15°17'52",7033	15°21'18",9681	15°24'45",2329	0,26	
15°45'22",8217	15°48'49",0865	15°52'15",3513	15°55'41",6161	15°59'07",8809	0,27	
16°19'45",4698	16°23'11",7346	16°26'37",9994	16°30'04",2642	16°33'30",5290	0,28	
16°54'08",1178	16°57'34",3826	17°01'00",6475	17°04'26",9123	17°07'53",1771	0,29	
17°28'30",7659	17°31'57",0307	17°35'23",2955	17°38'49",5603	17°42'15",8251	0,30	
18°02'53",4140	18°06'19",6788	18°09'45",9436	18°13'12",2084	18°16'38",4732	0,31	
18°37'16",0620	18°40'42",3268	18°44'08",5916	18°47'34",8564	18°51'01",1213	0,32	
19°11'38",7101	19°15'04",9749	19°18'31",2397	19°21'57",5045	19°25'23",7693	0,33	
19°46'01",3582	19°49'27",6230	19°52'53",8878	19°56'20",1526	19°59'46",4174	0,34	
20°20'24",0062	20°23'50",2710	20°27'16",5358	20°30'42",8006	20°34'09",0654	0,35	
20°54'46",6543	20°58'12",9191	21°01'39",1839	21°05'05",4487	21°08'31",7135	0,36	
21°29'09",3023	21°32'35",5671	21°36'01",8320	21°39'28",0968	21°42'54",3616	0,37	
22°03'31",9504	22°06'58",2152	22°10'24",4800	22°13'50",7448	22°17'17",0096	0,38	
22°37'54",5985	22°41'20",8633	22°44'47",1281	22°48'13",3929	22°51'39",6577	0,39	

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The error of the approximations given on pp. 354 and 355 is not greater than 0",00005 and the error of an approximation obtained by means of this table is less than 0",000106 + the error of rounding off the result.

An example of calculation is given on p. 361.



## XXI. Zamiana radianów na stopnie, minuty i sekundy

radiany	0	1	2	3	4
0,40	22°55'05",9225	22°58'32",1873	23°01'58",4521	23°05'24",7169	23°08'50",9817
0,41	23°29'28",5706	23°32'54",8354	23°36'21",1002	23°39'47",3650	23°43'13",6298
0,42	24°03'51",2186	24°07'17",4834	24°10'43",7482	24°14'10",0130	24°17'36",2778
0,43	24°38'13",8667	24°41'40",1315	24°45'06",3963	24°48'32",6611	24°51'58",9259
0,44	25°12'36",5147	25°16'02",7796	25°19'29",0444	25°22'55",3092	25°26'21",5740
0,45	25°46'59",1628	25°50'25",4276	25°53'51",6924	25°57'17",9572	26°00'44",2220
0,46	26°21'21",8109	26°24'48",0757	26°28'14",3405	26°31'40",6053	26°35'06",8701
0,47	26°55'44",4589	26°59'10",7237	27°02'36",9885	27°06'03",2534	27°09'29",5182
0,48	27°30'07",1070	27°33'33",3718	27°36'59",6366	27°40'25",9014	27°43'52",1662
0,49	28°04'29",7551	28°07'56",0199	28°11'22",2847	28°14'48",5495	28°18'14",8143
0,50	28°38'52",4031	28°42'18",6679	28°45'44",9327	28°49'11",1975	28°52'37",4623
0,51	29°13'15",0512	29°16'41",3160	29°20'07",5808	29°23'33",8456	29°27'00",1104
0,52	29°47'37",6992	29°51'03",9641	29°54'30",2289	29°57'56",4937	30°01'22",7585
0,53	30°22'00",3473	30°25'26",6121	30°28'52",8769	30°32'19",1417	30°35'45",4065
0,54	30°56'22",9954	30°59'49",2602	31°03'15",5250	31°06'41",7898	31°10'08",0546
0,55	31°30'45",6434	31°34'11",9082	31°37'38",1730	31°41'04",4379	31°44'30",7027
0,56	32°05'08",2915	32°08'34",5563	32°12'00",8211	32°15'27",0859	32°18'53",3507
0,57	32°39'30",9396	32°42'57",2044	32°46'23",4692	32°49'49",7340	32°53'15",9988
0,58	33°13'53",5876	33°17'19",8524	33°20'46",1172	33°24'12",3820	33°27'38",6468
0,59	33°48'16",2357	33°51'42",5005	33°55'08",7653	33°58'35",0301	34°02'01",2949
0,60	34°22'38",8837	34°26'05",1486	34°29'31",4134	34°32'57",6782	34°36'23",9430
0,61	34°57'01",5318	35°00'27",7966	35°03'54",0614	35°07'20",3262	35°10'46",5910
0,62	35°31'24",1799	35°34'50",4447	35°38'16",7095	35°41'42",9743	35°45'09",2391
0,63	36°05'46",8279	36°09'13",0927	36°12'39",3575	36°16'05",6224	36°19'31",8872
0,64	36°40'09",4760	36°43'35",7408	36°47'02",0056	36°50'28",2704	36°53'54",5352
0,65	37°14'32",1241	37°17'58",3889	37°21'24",6537	37°24'50",9185	37°28'17",1833
0,66	37°48'54",7721	37°52'21",0369	37°55'47",3017	37°59'13",5665	38°02'39",8313
0,67	38°23'17",4202	38°26'43",6850	38°30'09",9498	38°33'36",2146	38°37'02",4794
0,68	38°57'40",0682	39°01'06",3331	39°04'32",5979	39°07'58",8627	39°11'25",1275
0,69	39°32'02",7163	39°35'28",9811	39°38'55",2459	39°42'21",5107	39°45'47",7755
0,70	40°06'25",3644	40°09'51",6292	40°13'17",8940	40°16'44",1588	40°20'10",4236
0,71	40°40'48",0124	40°44'14",2772	40°47'40",5420	40°51'06",8069	40°54'33",0717
0,72	41°15'10",6605	41°18'36",9253	41°22'03",1901	41°25'29",4549	41°28'55",7197
0,73	41°49'33",3086	41°52'59",5734	41°56'25",8382	41°59'52",1030	42°03'18",3678
0,74	42°23'55",9566	42°27'22",2214	42°30'48",4862	42°34'14",7510	42°37'41",0158
0,75	42°58'18",6047	43°01'44",8695	43°05'11",1343	43°08'37",3991	43°12'03",6639
0,76	43°32'41",2527	43°36'07",5176	43°39'33",7824	43°43'00",0472	43°46'26",3120
0,77	44°07'03",9008	44°10'30",1656	44°13'56",4304	44°17'22",6952	44°20'48",9600
0,78	44°41'26",5489	44°44'52",8137	44°48'19",0785	44°51'45",3433	44°55'11",6081
0,79	45°15'49",1969	45°19'15",4617	45°22'41",7265	45°26'07",9914	45°29'34",2562
0,80	45°50'11",8450	45°53'38",1098	45°57'04",3746	46°00'30",6394	46°03'56",9042
0,81	46°24'34",4931	46°28'00",7579	46°31'27",0227	46°34'53",2875	46°38'19",5523
0,82	46°58'57",1411	47°02'23",4059	47°05'49",6707	47°09'15",9355	47°12'42",2003
0,83	47°33'19",7892	47°36'46",0540	47°40'12",3188	47°43'38",5836	47°47'04",8484
0,84	48°07'42",4372	48°11'08",7021	48°14'34",9669	48°18'01",2317	48°21'27",4965
0,85	48°42'05",0853	48°45'31",3501	48°48'57",6149	48°52'23",8797	48°55'50",1445
0,86	49°16'27",7334	49°19'53",9982	49°23'20",2630	49°26'46",5278	49°30'12",7926
0,87	49°50'50",3814	49°54'16",6462	49°57'42",9110	50°01'09",1759	50°04'35",4407
0,88	50°25'13",0295	50°28'39",2943	50°32'05",5591	50°35'31",8239	50°38'58",0887
0,89	50°59'35",6776	51°03'01",9424	51°06'28",2072	51°09'54",4720	51°13'20",7368

Błąd przybliżeń podanych na str. 356 i 357 jest nie większy niż 0",00005, a błąd przybliżenia obliczonego za pomocą tej tablicy jest mniejszy niż 0",000106 + błąd zaokrąglenia wyniku.

Przykład obliczenia na str. 360.

# XXI. Conversion of radians to degrees, minutes and seconds

5	6	7	8	9	radians
23°12'17",2465	23°15'43",5113	23°19'09",7761	23°22'36",0409	23°26'02",3058	0,40
23°46'39",8946	23°50'06",1594	23°53'32",4242	23°56'58",6890	24°00'24",9538	0,41
24°21'02",5427	24°24'28",8075	24°27'55",0723	24°31'21",3371	24°34'47",6019	0,42
24°55'25",1907	24°58'51",4555	25°02'17",7203	25°05'43",9851	25°09'10",2499	0,43
25°29'47",8388	25°33'14",1036	25°36'40",3684	25°40'06",6332	25°43'32",8980	0,44
26°04'10",4868	26°07'36",7516	26°11'03",0165	26°14'29",2813	26°17'55",5461	0,45
26°38'33",1349	26°41'59",3997	26°45'25",6645	26°48'51",9293	26°52'18",1941	0,46
27°12'55",7830	27°16'22",0478	27°19'48",3126	27°23'14",5774	27°26'40",8422	0,47
27°47'18",4310	27°50'44",6958	27°54'10",9606	27°57'37",2254	28°01'03",4903	0,48
28°21'41",0791	28°25'07",3439	28°28'33",6087	28°31'59",8735	28°35'26",1383	0,49
28°56'03",7272	28°59'29",9920	29°02'56",2568	29°06'22",5216	29°09'48",7864	0,50
29°30'26",3752	29°33'52",6400	29°37'18",9048	29°40'45",1696	29°44'11",4344	0,51
30°04'49",0233	30°08'15",2881	30°11'41",5529	30°15'07",8177	30°18'34",0825	0,52
30°39'11",6713	30°42'37",9361	30°46'04",2010	30°49'30",4658	30°52'56",7306	0,53
31°13'34",3194	31°17'00",5842	31°20'26",8490	31°23'53",1138	31°27'19",3786	0,54
31°47'56",9675	31°51'23",2323	31°54'49",4971	31°58'15",7619	32°01'42",0267	0,55
32°22'19",6155	32°25'45",8803	32°29'12",1451	32°32'38",4099	32°36'04",6748	0,56
32°56'42",2636	33°00'08",5284	33°03'34",7932	33°07'01",0580	33°10'27",3228	0,57
33°31'04",9117	33°34'31",1765	33°37'57",4413	33°41'23",7061	33°44'49",9709	0,58
34°05'27",5597	34°08'53",8245	34°12'20",0893	34°15'46",3541	34°19'12",6189	0,59
34°39'50",2078	34°43'16",4726	34°46'42",7374	34°50'09",0022	34°53'35",2670	0,60
35°14'12",8558	35°17'39",1206	35°21'05",3855	35°24'31",6503	35°27'57",9151	0,61
35°48'35",5039	35°52'01",7687	35°55'28",0335	35°58'54",2983	36°02'20",5631	0,62
36°22'58",1520	36°26'24",4168	36°29'50",6816	36°33'16",9464	36°36'43",2112	0,63
36°57'20",8000	37°00'47",0648	37°04'13",3296	37°07'39",5944	37°11'05",8593	0,64
37°31'43",4481	37°35'09",7129	37°38'35",9777	37°42'02",2425	37°45'28",5073	0,65
38°06'06",0962	38°09'32",3610	38°12'58",6258	38°16'24",8906	38°19'51",1554	0,66
38°40'28",7442	38°43'55",0090	38°47'21",2738	38°50'47",5386	38°54'13",8034	0,67
39°14'51",3923	39°18'17",6571	39°21'43",9219	39°25'10",1867	39°28'36",4515	0,68
39°49'14",0403	39°52'40",3051	39°56'06",5700	39°59'32",8348	40°02'59",0996	0,69
40°23'36",6884	40°27'02",9532	40°30'29",2180	40°33'55",4828	40°37'21",7476	0,70
40°57'59",3365	41°01'25",6013	41°04'51",8661	41°08'18",1309	41°11'44",3957	0,71
41°32'21",9845	41°35'48",2493	41°39'14",5141	41°42'40",7789	41°46'07",0438	0,72
42°06'44",6326	42°10'10",8974	42°13'37",1622	42°17'03",4270	42°20'29",6918	0,73
42°41'07",2807	42°44'33",5455	42°47'59",8103	42°51'26",0751	42°54'52",3399	0,74
43°15'29",9287	43°18'56",1935	43°22'22",4583	43°25'48",7231	43°29'14",9879	0,75
43°49'52",5768	43°53'18",8416	43°56'45",1064	44°00'11",3712	44°03'37",6360	0,76
44°24'15",2248	44°27'41",4896	44°31'07",7545	44°34'34",0193	44°38'00",2841	0,77
44°58'37",8729	45°02'04",1377	45°05'30",4025	45°08'56",6673	45°12'22",9321	0,78
45°33'00",5210	45°36'26",7858	45°39'53",0506	45°43'19",3154	45°46'45",5802	0,79
46°07'23",1690	46°10'49",4338	46°14'15",6986	46°17'41",9634	46°21'08",2283	0,80
46°41'45",8171	46°45'12",0819	46°48'38",3467	46°52'04",6115	46°55'30",8763	0,81
47°16'08",4652	47°19'34",7300	47°23'00",9948	47°26'27",2596	47°29'53",5244	0,82
47°50'31",1132	47°53'57",3780	47°57'23",6428	48°00'49",9076	48°04'16",1724	0,83
48°24'53",7613	48°28'20",0261	48°31'46",2909	48°35'12",5557	48°38'38",8205	0,84
48°59'16",4093	49°02'42",6741	49°06'08",9390	49°09'35",2038	49°13'01",4686	0,85
49°33'39",0574	49°37'05",3222	49°40'31",5870	49°43'57",8518	49°47'24",1166	0,86
50°08'01",7055	50°11'27",9703	50°14'54",2351	50°18'20",4999	50°21'46",7647	0,87
50°42'24",3535	50°45'50",6183	50°49'16",8831	50°52'43",1479	50°56'09",4128	0,88
51°16'47",0016	51°20'13",2664	51°23'39",5312	51°27'05",7960	51°30'32",0608	0,89

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The error of the approximations given on pp. 356 and 357 is not greater than 0",00005 and the error of an approximation obtained by means of this table is less than 0",000106 + the error of rounding off the result.

An example of calculation is given on p. 361.

## XXI. Zamiana radianów na stopnie, minuty i sekundy

radiany	0	1	2	3	4
0,90	51°33'58",3256	51°37'24",5904	51°40'50",8552	51°44'17",1200	51°47'43",3848
0,91	52°08'20",9737	52°11'47",2385	52°15'13",5033	52°18'39",7681	52°22'06",0329
0,92	52°42'43",6217	52°46'09",8866	52°49'36",1514	52°53'02",4162	52°56'28",6810
0,93	53°17'06",2698	53°20'32",5346	53°23'58",7994	53°27'25",0642	53°30'51",3290
0,94	53°51'28",9179	53°54'55",1827	53°58'21",4475	54°01'47",7123	54°05'13",9771
0,95	54°25'51",5659	54°29'17",8307	54°32'44",0955	54°36'10",3604	54°39'36",6252
0,96	55°00'14",2140	55°03'40",4788	55°07'06",7436	55°10'33",0084	55°13'59",2732
0,97	55°34'36",8621	55°38'03",1269	55°41'29",3917	55°44'55",6565	55°48'21",9213
0,98	56°08'59",5101	56°12'25",7749	56°15'52",0397	56°19'18",3045	56°22'44",5693
0,99	56°43'22",1582	56°46'48",4230	56°50'14",6878	56°53'40",9526	56°57'07",2174
1,00	57°17'44",8062	57°21'11",0711	57°24'37",3359	57°28'03",6007	57°31'29",8655
1,01	57°52'07",4543	57°55'33",7191	57°58'59",9839	58°02'26",2487	58°05'52",5135
1,02	58°26'30",1024	58°29'56",3672	58°33'22",6320	58°36'48",8968	58°40'15",1616
1,03	59°00'52",7504	59°04'19",0152	59°07'45",2800	59°11'11",5449	59°14'37",8097
1,04	59°35'15",3985	59°38'41",6633	59°42'07",9281	59°45'34",1929	59°49'00",4577
1,05	60°09'38",0466	60°13'04",3114	60°16'30",5762	60°19'56",8410	60°23'23",1058
1,06	60°44'00",6946	60°47'26",9594	60°50'53",2242	60°54'19",4890	60°57'45",7538
1,07	61°18'23",3427	61°21'49",6075	61°25'15",8723	61°28'42",1371	61°32'08",4019
1,08	61°52'45",9907	61°56'12",2556	61°59'38",5204	62°03'04",7852	62°06'31",0500
1,09	62°27'08",6388	62°30'34",9036	62°34'01",1684	62°37'27",4332	62°40'53",6980
1,10	63°01'31",2869	63°04'57",5517	63°08'23",8165	63°11'50",0813	63°15'16",3461
1,11	63°35'53",9349	63°39'20",1997	63°42'46",4645	63°46'12",7294	63°49'38",9942
1,12	64°10'16",5830	64°13'42",8478	64°17'09",1126	64°20'35",3774	64°24'01",6422
1,13	64°44'39",2311	64°48'05",4959	64°51'31",7607	64°54'58",0255	64°58'24",2903
1,14	65°19'01",8791	65°22'28",1439	65°25'54",4087	65°29'20",6735	65°32'46",9383
1,15	65°53'24",5272	65°56'50",7920	66°00'17",0568	66°03'43",3216	66°07'09",5864
1,16	66°27'47",1752	66°31'13",4401	66°34'39",7049	66°38'05",9697	66°41'32",2345
1,17	67°02'09",8233	67°05'36",0881	67°09'02",3529	67°12'28",6177	67°15'54",8825
1,18	67°36'32",4714	67°39'58",7362	67°43'25",0010	67°46'51",2658	67°50'17",5306
1,19	68°10'55",1194	68°14'21",3842	68°17'47",6490	68°21'13",9139	68°24'40",1787
1,20	68°45'17",7675	68°48'44",0323	68°52'10",2971	68°55'36",5619	68°59'02",8267
1,21	69°19'40",4156	69°23'06",6804	69°26'32",9452	69°29'59",2100	69°33'25",4748
1,22	69°54'03",0636	69°57'29",3284	70°00'55",5932	70°04'21",8580	70°07'48",1228
1,23	70°28'25",7117	70°31'51",9765	70°35'18",2413	70°38'44",5061	70°42'10",7709
1,24	71°02'48",3597	71°06'14",6246	71°09'40",8894	71°13'07",1542	71°16'33",4190
1,25	71°37'11",0078	71°40'37",2726	71°44'03",5374	71°47'29",8022	71°50'56",0670
1,26	72°11'33",6559	72°14'59",9207	72°18'26",1855	72°21'52",4503	72°25'18",7151
1,27	72°45'56",3039	72°49'22",5687	72°52'48",8335	72°56'15",0984	72°59'41",3632
1,28	73°20'18",9520	73°23'45",2168	73°27'11",4816	73°30'37",7464	73°34'04",0112
1,29	73°54'41",6001	73°58'07",8649	74°01'34",1297	74°05'00",3945	74°08'26",6593
1,30	74°29'04",2481	74°32'30",5129	74°35'56",7777	74°39'23",0425	74°42'49",3073
1,31	75°03'26",8962	75°06'53",1610	75°10'19",4258	75°13'45",6906	75°17'11",9554
1,32	75°37'49",5442	75°41'15",8091	75°44'42",0739	75°48'08",3387	75°51'34",6035
1,33	76°12'12",1923	76°15'38",4571	76°19'04",7219	76°22'30",9867	76°25'57",2515
1,34	76°46'34",8404	76°50'01",1052	76°53'27",3700	76°56'53",6348	77°00'19",8996
1,35	77°20'57",4884	77°24'23",7532	77°27'50",0180	77°31'16",2829	77°34'42",5477
1,36	77°55'20",1365	77°58'46",4013	78°02'12",6661	78°05'38",9309	78°09'05",1957
1,37	78°29'42",7846	78°33'09",0494	78°36'35",3142	78°40'01",5790	78°43'27",8438
1,38	79°04'05",4326	79°07'31",6974	79°10'57",9622	79°14'24",2270	79°17'50",4918
1,39	79°38'28",0807	79°41'54",3455	79°45'20",6103	79°48'46",8751	79°52'13",1399

Błąd przybliżeń podanych na str. 358 i 359 jest nie większy niż 0",00005, a błąd przybliżenia obliczonego za pomocą tej tablicy jest mniejszy niż 0",000106 + błąd zaokrąglenia wyniku.

Przykład obliczenia na str. 360.

# XXI. Conversion of radians to degrees, minutes and seconds

5	6	7	8	9	radians	
51°51'09",6497	51°54'35",9145	51°58'02",1793	52°01'28",4441	52°04'54",7089	0,90	
52°25'32",2977	52°28'58",5625	52°32'24",8273	52°35'51",0921	52°39'17",3569	0,91	
52°59'54",9458	53°03'21",2106	53°06'47",4754	53°10'13",7402	53°13'40",0050	0,92	
53°34'17",5938	53°37'43",8586	53°41'10",1235	53°44'36",3883	53°48'02",6531	0,93	
54°08'40",2419	54°12'06",5067	54°15'32",7715	54°18'59",0363	54°22'25",3011	0,94	
54°43'02",8900	54°46'29",1548	54°49'55",4196	54°53'21",6844	54°56'47",9492	0,95	
55°17'25",5380	55°20'51",8028	55°24'18",0676	55°27'44",3324	55°31'10",5973	0,96	
55°51'48",1861	55°55'14",4509	55°58'40",7157	56°02'06",9805	56°05'33",2453	0,97	
56°26'10",8342	56°29'37",0990	56°33'03",3638	56°36'29",6286	56°39'55",8934	0,98	
57°00'33",4822	57°03'59",7470	57°07'26",0118	57°10'52",2766	57°14'18",5414	0,99	rad → °, ', "
57°34'56",1303	57°38'22",3951	57°41'48",6599	57°45'14",9247	57°48'41",1895	1,00	
58°09'18",7783	58°12'45",0431	58°16'11",3080	58°19'37",5728	58°23'03",8376	1,01	
58°43'41",4264	58°47'07",6912	58°50'33",9560	58°54'00",2208	58°57'26",4856	1,02	
59°18'04",0745	59°21'30",3393	59°24'56",6041	59°28'22",8689	59°31'49",1337	1,03	
59°52'26",7225	59°55'52",9873	59°59'19",2521	60°02'45",5169	60°06'11",7818	1,04	
60°26'49",3706	60°30'15",6354	60°33'41",9002	60°37'08",1650	60°40'34",4298	1,05	
61°01'12",0187	61°04'38",2835	61°08'04",5483	61°11'30",8131	61°14'57",0779	1,06	
61°35'34",6667	61°39'00",9315	61°42'27",1963	61°45'53",4611	61°49'19",7259	1,07	
62°09'57",3148	62°13'23",5796	62°16'49",8444	62°20'16",1092	62°23'42",3740	1,08	
62°44'19",9628	62°47'46",2276	62°51'12",4925	62°54'38",7573	62°58'05",0221	1,09	
63°18'42",6109	63°22'08",8757	63°25'35",1405	63°29'01",4053	63°32'27",6701	1,10	
63°53'05",2590	63°56'31",5238	63°59'57",7886	64°03'24",0534	64°06'50",3182	1,11	
64°27'27",9070	64°30'54",1718	64°34'20",4366	64°37'46",7014	64°41'12",9663	1,12	
65°01'50",5551	65°05'16",8199	65°08'43",0847	65°12'09",3495	65°15'35",6143	1,13	
65°36'13",2032	65°39'39",4680	65°43'05",7328	65°46'31",9976	65°49'58",2624	1,14	
66°10'35",8512	66°14'02",1160	66°17'28",3808	66°20'54",6456	66°24'20",9104	1,15	
66°44'58",4993	66°48'24",7641	66°51'51",0289	66°55'17",2937	66°58'43",5585	1,16	
67°19'21",1473	67°22'47",4121	67°26'13",6770	67°29'39",9418	67°33'06",2066	1,17	
67°53'43",7954	67°57'10",0602	68°00'36",3250	68°04'02",5898	68°07'28",8546	1,18	
68°28'06",4435	68°31'32",7083	68°34'58",9731	68°38'25",2379	68°41'51",5027	1,19	
69°02'29",0915	69°05'55",3563	69°09'21",6211	69°12'47",8859	69°16'14",1508	1,20	
69°36'51",7396	69°40'18",0044	69°43'44",2692	69°47'10",5340	69°50'36",7988	1,21	
70°11'14",3877	70°14'40",6525	70°18'06",9173	70°21'33",1821	70°24'59",4469	1,22	
70°45'37",0357	70°49'03",3005	70°52'29",5653	70°55'55",8301	70°59'22",0949	1,23	
71°19'59",6838	71°23'25",9486	71°26'52",2134	71°30'18",4782	71°33'44",7430	1,24	
71°54'22",3318	71°57'48",5966	72°01'14",8615	72°04'41",1263	72°08'07",3911	1,25	
72°28'44",9799	72°32'11",2447	72°35'37",5095	72°39'03",7743	72°42'30",0391	1,26	
73°03'07",6280	73°06'33",8928	73°10'00",1576	73°13'26",4224	73°16'52",6872	1,27	
73°37'30",2760	73°40'56",5408	73°44'22",8056	73°47'49",0704	73°51'15",3353	1,28	
74°11'52",9241	74°15'19",1889	74°18'45",4537	74°22'11",7185	74°25'37",9833	1,29	
74°46'15",5722	74°49'41",8370	74°53'08",1018	74°56'34",3666	75°00'00",6314	1,30	
75°20'38",2202	75°24'04",4850	75°27'30",7498	75°30'57",0146	75°34'23",2794	1,31	
75°55'00",8683	75°58'27",1331	76°01'53",3979	76°05'19",6627	76°08'45",9275	1,32	
76°29'23",5163	76°32'49",7811	76°36'16",0460	76°39'42",3108	76°43'08",5756	1,33	
77°03'46",1644	77°07'12",4292	77°10'38",6940	77°14'04",9588	77°17'31",2236	1,34	
77°38'08",8125	77°41'35",0773	77°45'01",3421	77°48'27",6069	77°51'53",8717	1,35	
78°12'31",4605	78°15'57",7253	78°19'23",9901	78°22'50",2549	78°26'16",5198	1,36	
78°46'54",1086	78°50'20",3734	78°53'46",6382	78°57'12",9030	79°00'39",1678	1,37	
79°21'16",7567	79°24'43",0215	79°28'09",2863	79°31'35",5511	79°35'01",8159	1,38	
79°55'39",4047	79°59'05",6695	80°02'31",9343	80°05'58",1991	80°09'24",4639	1,39	

The error of the approximations given on pp. 358 and 359 is not greater than 0",00005 and the error of an approximation obtained by means of this table is less than 0",000106 + the error of rounding off the result:

An example of calculation is given on p. 361.



## XXI. Zamiana radianów na stopnie, minuty i sekundy

radiany	0	1	2	3	4
1,40	80°12'50",7287	80°16'16",9936	80°19'43",2584	80°23'09",5232	80°26'35",7880
1,41	80°47'13",3768	80°50'39",6416	80°54'05",9064	80°57'32",1712	81°00'58",4360
1,42	81°21'36",0249	81°25'02",2897	81°28'28",5545	81°31'54",8193	81°35'21",0841
1,43	81°55'58",6729	81°59'24",9377	82°02'51",2025	82°06'17",4674	82°09'43",7322
1,44	82°30'21",3210	82°33'47",5858	82°37'13",8506	82°40'40",1154	82°44'06",3802
1,45	83°04'43",9691	83°08'10",2339	83°11'36",4987	83°15'02",7635	83°18'29",0283
1,46	83°39'06",6171	83°42'32",8819	83°45'59",1467	83°49'25",4115	83°52'51",6763
1,47	84°13'29",2652	84°16'55",5300	84°20'21",7948	84°23'48",0596	84°27'14",3244
1,48	84°47'51",9132	84°51'18",1781	84°54'44",4429	84°58'10",7077	85°01'36",9725
1,49	85°22'14",5613	85°25'40",8261	85°29'07",0909	85°32'33",3557	85°35'59",6205
1,50	85°56'37",2094	86°00'03",4742	86°03'29",7390	86°06'56",0038	86°10'22",2686
1,51	86°30'59",8574	86°34'26",1222	86°37'52",3870	86°41'18",6519	86°44'44",9167
1,52	87°05'22",5055	87°08'48",7703	87°12'15",0351	87°15'41",2999	87°19'07",5647
1,53	87°39'45",1536	87°43'11",4184	87°46'37",6832	87°50'03",9480	87°53'30",2128
1,54	88°14'07",8016	88°17'34",0664	88°21'00",3312	88°24'26",5960	88°27'52",8608
1,55	88°48'30",4497	88°51'56",7145	88°55'22",9793	88°58'49",2441	89°02'15",5089
1,56	89°22'53",0977	89°26'19",3626	89°29'45",6274	89°33'11",8922	89°36'38",1570
1,57	89°57'15",7458	90°00'42",0106	90°04'08",2754	90°07'34",5402	90°11'00",8050
1,58	90°31'38",3939	90°35'04",6587	90°38'30",9235	90°41'57",1883	90°45'23",4531
1,59	91°06'01",0419	91°09'27",3067	91°12'53",5715	91°16'19",8364	91°19'46",1012
1,60	91°40'23",6900	91°43'49",9548	91°47'16",2196	91°50'42",4844	91°54'08",7492
1,61	92°14'46",3381	92°18'12",6029	92°21'38",8677	92°25'05",1325	92°28'31",3973
1,62	92°49'08",9861	92°52'35",2509	92°56'01",5157	92°59'27",7805	93°02'54",0453
1,63	93°23'31",6342	93°26'57",8990	93°30'24",1638	93°33'50",4286	93°37'16",6934
1,64	93°57'54",2822	94°01'20",5471	94°04'46",8119	94°08'13",0767	94°11'39",3415
1,65	94°32'16",9303	94°35'43",1951	94°39'09",4599	94°42'35",7247	94°46'01",9895
1,66	95°06'39",5784	95°10'05",8432	95°13'32",1080	95°16'58",3728	95°20'24",6376
1,67	95°41'02",2264	95°44'28",4912	95°47'54",7560	95°51'21",0209	95°54'47",2857
1,68	96°15'24",8745	96°18'51",1393	96°22'17",4041	96°25'43",6689	96°29'09",9337
1,69	96°49'47",5226	96°53'13",7874	96°56'40",0522	97°00'06",3170	97°03'32",5818
1,70	97°24'10",1706	97°27'36",4354	97°31'02",7002	97°34'28",9650	97°37'55",2298
1,71	97°58'32",8187	98°01'59",0835	98°05'25",3483	98°08'51",6131	98°12'17",8779
1,72	98°32'55",4667	98°36'21",7316	98°39'47",9964	98°43'14",2612	98°46'40",5260
1,73	99°07'18",1148	99°10'44",3796	99°14'10",6444	99°17'36",9092	99°21'03",1740
1,74	99°41'40",7629	99°45'07",0277	99°48'33",2925	99°51'59",5573	99°55'25",8221
1,75	100°16'03",4109	100°19'29",6757	100°22'55",9405	100°26'22",2054	100°29'48",4702
1,76	100°50'26",0590	100°53'52",3238	100°57'18",5886	101°00'44",8534	101°04'11",1182
1,77	101°24'48",7071	101°28'14",9719	101°31'41",2367	101°35'07",5015	101°38'33",7663
1,78	101°59'11",3551	102°02'37",6199	102°06'03",8847	102°09'30",1495	102°12'56",4143
1,79	102°33'34",0032	102°37'00",2680	102°40'26",5328	102°43'52",7976	102°47'19",0624

2 rad $\approx$ 114°35'29",6125,	3 rad $\approx$ 171°53'14",4187,	4 rad $\approx$ 229°10'59",2250,
8 rad $\approx$ 458°21'58",4500,	9 rad $\approx$ 515°39'43",2562,	10 rad $\approx$ 572°57'28",0625,
50 rad $\approx$ 2864°47'20",3124,	60 rad $\approx$ 3437°44'48",3748,	70 rad $\approx$ 4010°42'16",4373.

Błąd przybliżeń podanych na str. 360 i 361 jest nie większy niż 0",00005, a błąd przybliżenia obliczonego za pomocą tej tablicy dla kątów dodatnich mniejszych od 1,800 radianów jest mniejszy niż 0",000106 + błąd zaokrąglenia wyniku.

Przykład. Aby zamienić 11,4658938 rad na stopnie, minuty i sekundy, odczytujemy w tablicy, że 10 rad  $\approx$  572°57'28",0625 z dokładnością do 0",00005, a 1,465 rad  $\approx$  83°56'17",9412. Ponadto na str. 355 odczytujemy, że 0,00089 rad  $\approx$  3'03",5757, a następnie, przesuwając odpowiednio przecinek, 0,0000038 rad  $\approx$  0",783806. Mamy zatem 11,4658938 rad  $\approx$  572°57'28",0625 + + 83°56'17",9412 + 3'03",5757 + 0",783806 = 656°56'50",363206 z dokładnością do 0",00005 + 0",000106 = 0",000156, skąd 11,4658938 rad  $\approx$  656°56'50",3632 z dokładnością do 0",0002.

## XXI. Conversion of radians to degrees, minutes and seconds

5	6	7	8	9	radians
80°30'02",0528	80°33'28",3176	80°36'54",5824	80°40'20",8472	80°43'47",1120	1,40
81°04'24",7008	81°07'50",9656	81°11'17",2305	81°14'43",4953	81°18'09",7601	1,41
81°38'47",3489	81°42'13",6137	81°45'39",8785	81°49'06",1433	81°52'32",4081	1,42
82°13'09",9970	82°16'36",2618	82°20'02",5266	82°23'28",7914	82°26'55",0562	1,43
82°47'32",6450	82°50'58",9098	82°54'25",1746	82°57'51",4394	83°01'17",7043	1,44
83°21'55",2931	83°25'21",5579	83°28'47",8227	83°32'14",0875	83°35'40",3523	1,45
83°56'17",9412	83°59'44",2060	84°03'10",4708	84°06'36",7356	84°10'03",0004	1,46
84°30'40",5892	84°34'06",8540	84°37'33",1188	84°40'59",3836	84°44'25",6484	1,47
85°05'03",2373	85°08'29",5021	85°11'55",7669	85°15'22",0317	85°18'48",2965	1,48
85°39'25",8853	85°42'52",1501	85°46'18",4150	85°49'44",6798	85°53'10",9446	1,49
86°13'48",5334	86°17'14",7982	86°20'41",0630	86°24'07",3278	86°27'33",5926	1,50
86°48'11",1815	86°51'37",4463	86°55'03",7111	86°58'29",9759	87°01'56",2407	1,51
87°22'33",8295	87°26'00",0943	87°29'26",3591	87°32'52",6239	87°36'18",8888	1,52
87°56'56",4776	88°00'22",7424	88°03'49",0072	88°07'15",2720	88°10'41",5368	1,53
88°31'19",1257	88°34'45",3905	88°38'11",6553	88°41'37",9201	88°45'04",1849	1,54
89°05'41",7737	89°09'08",0385	89°12'34",3033	89°16'00",5681	89°19'26",8329	1,55
89°40'04",4218	89°43'30",6866	89°46'56",9514	89°50'23",2162	89°53'49",4810	1,56
90°14'27",0698	90°17'53",3346	90°21'19",5995	90°24'45",8643	90°28'12",1291	1,57
90°48'49",7179	90°52'15",9827	90°55'42",2475	90°59'08",5123	91°02'34",7771	1,58
91°23'12",3660	91°26'38",6308	91°30'04",8956	91°33'31",1604	91°36'57",4252	1,59
91°57'35",0140	92°01'01",2788	92°04'27",5436	92°07'53",8084	92°11'20",0733	1,60
92°31'57",6621	92°35'23",9269	92°38'50",1917	92°42'16",4565	92°45'42",7213	1,61
93°06'20",3102	93°09'46",5750	93°13'12",8398	93°16'39",1046	93°20'05",3694	1,62
93°40'42",9582	93°44'09",2230	93°47'35",4878	93°51'01",7526	93°54'28",0174	1,63
94°15'05",6063	94°18'31",8711	94°21'58",1359	94°25'24",4007	94°28'50",6655	1,64
94°49'28",2543	94°52'54",5191	94°56'20",7840	94°59'47",0488	95°03'13",3136	1,65
95°23'50",9024	95°27'17",1672	95°30'43",4320	95°34'09",6968	95°37'35",9616	1,66
95°58'13",5505	96°01'39",8153	96°05'06",0801	96°08'32",3449	96°11'58",6097	1,67
96°32'36",1985	96°36'02",4633	96°39'28",7281	96°42'54",9929	96°46'21",2578	1,68
97°06'58",8466	97°10'25",1114	97°13'51",3762	97°17'17",6410	97°20'43",9058	1,69
97°41'21",4947	97°44'47",7595	97°48'14",0243	97°51'40",2891	97°55'06",5539	1,70
98°15'44",1427	98°19'10",4075	98°22'36",6723	98°26'02",9371	98°29'29",2019	1,71
98°50'06",7908	98°53'33",0556	98°56'59",3204	99°00'25",5852	99°03'51",8500	1,72
99°24'29",4388	99°27'55",7036	99°31'21",9685	99°34'48",2333	99°38'14",4981	1,73
99°58'52",0869	100°02'18",3517	100°05'44",6165	100°09'10",8813	100°12'37",1461	1,74
100°33'14",7350	100°36'40",9998	100°40'07",2646	100°43'33",5294	100°46'59",7942	1,75
101°07'37",3830	101°11'03",6478	101°14'29",9126	101°17'56",1774	101°21'22",4423	1,76
101°42'00",0311	101°45'26",2959	101°48'52",5607	101°52'18",8255	101°55'45",0903	1,77
102°16'22",6792	102°19'48",9440	102°23'15",2088	102°26'41",4736	102°30'07",7384	1,78
102°50'45",3272	102°54'11",5920	102°57'37",8568	103°01'04",1216	103°04'30",3864	1,79

5 rad $\approx$ 286°28'44",0312,	6 rad $\approx$ 343°46'28",8375,	7 rad $\approx$ 401°04'13",6437,
20 rad $\approx$ 1145°54'56",1249,	30 rad $\approx$ 1718°52'24",1874,	40 rad $\approx$ 2291°49'52",2499,
80 rad $\approx$ 4583°39'44",4998,	90 rad $\approx$ 5156°37'12",5622,	100 rad $\approx$ 5729°34'40",6247.

The error of the approximations given on pp. 360 and 361 is not greater than 0",00005 and the error of an approximation found by means of this table for positive angles of less than 1,800 radians is less than 0",000106 + the error of rounding off the result.

**Example.** To convert 11,4658938 rad to degrees, minutes and seconds, we find in the table that 10 rad  $\approx$  572°57'28",0625 with error less than 0",00005 and 1,465 rad  $\approx$  83°56'17",9412. Moreover we find on p. 355 that 0,00089 rad  $\approx$  3'03",5757, and then moving the decimal point as required, 0,0000038 rad  $\approx$  0",783806. Thus we have 11,4658938 rad  $\approx$  572°57'28",0625 + 83°56'17",9412 + 3'03",5757 + 0",783806 = 656°56'50",363206 with error less than 0",00005 + 0",000106 = 0",000156, whence 11,4658938 rad  $\approx$  656°56'50",3632 with error less than 0",0002.