

第2篇 化工应用数学

编写人	吴乙申	宋 彬	李昌文
	徐自新	王彩凤	戴家辛
	张建初	夏宁茂	
审校人	郑 焱	周春晖	

概 述

数学是自然科学的基础。化学工程的不断发展,对数学的要求愈来愈高,应用也愈来愈广泛。《化工应用数学》作为《化学工程手册》的一篇,正是为了适应从事于化学工业的广大科技工作者的需要而编写的。

本篇内容基本上按习惯的数学系统介绍方法和理论。在内容取舍上,既考虑到我国化工学科应用数学原有的状况,同时也注意反映一些新的发展。各章均附录参考书籍,读者对内容需进一步了解时,可作适当选择。

本篇共分二十章。第一至第三章列入数学用表、图形及其公式。第五至第七章包括初等代数、平面三角及解析几何等内容。第八至第十章分别是微积分、无穷级数、矢量与场。在微积分中可见到最小二乘法与经验公式及数值积分等在化工中常用的一些方法。在场论中附有梯度、散度、旋度在柱面坐标和球面坐标下的表示式。第十一、十三、十四、十五章介绍了复变函数、差分方程、积分方程和积分变换中的基本概念、基本运算、常用性质及一些应用。第十二章包括常微分方程、偏微分方程及其数值解。以介绍解法为主,关于数值解仅介绍方法,不涉及相应的计算程序。第十六章是线性代数,编写时以矩阵代数作为工具,介绍线性方程组、线性空间和线性变换、欧氏空间与二次型的基本概念、理论和方法。鉴于代数理论在化工中的应用,我们在第十七章对布尔代数、群论、图论的最基本的概念作了简单的介绍,以适应部分读者的需要。第十八章最优化,包括定常系统和不定常系统的最优化方法,以定常系统为主。编写时重点介绍在何种情况下应如何去求得问题的最优解。第十九章概率统计由概率论、随机过程、统计方法和分析三部分组成,以统计方法和分析为主。特别是实验设计与方差分析介绍得较为详细。在最后一章电子计算机上的常用方法中,对较常用的插值、逼近、线代数计算、函数方程求根及数值微分、数值积分的方法作了介绍或比较,以便读者选用适当的方法及了解程序编制的基本思想。

2.1 数 学 用 表

2.1.1 乘方、方根表

(1) 平方表

n	0	1	2	3	4	5	6	7	8	9	n
10	10 000	10 201	10 404	10 609	10 816	11 025	11 236	11 449	11 664	11 881	10
11	12 100	12 321	12 544	12 769	12 996	13 225	13 456	13 689	13 924	14 161	11
12	14 400	14 641	14 884	15 129	15 376	15 625	15 876	16 129	16 384	16 641	12
13	16 900	17 161	17 424	17 689	17 956	18 225	18 496	18 769	19 044	19 321	13
14	19 600	19 881	20 164	20 449	20 736	21 025	21 316	21 609	21 904	22 201	14
15	22 500	22 801	23 104	23 409	23 716	24 025	24 336	24 649	24 964	25 281	15
16	25 600	25 921	26 244	26 569	26 896	27 225	27 556	27 889	28 224	28 561	16
17	28 900	29 241	29 584	29 929	30 276	30 625	30 976	31 329	31 684	32 041	17
18	32 400	32 761	33 124	33 489	33 856	34 225	34 596	34 969	35 344	35 721	18
19	36 100	36 481	36 864	37 249	37 636	38 025	38 416	38 809	39 204	39 601	19
20	40 000	40 401	40 804	41 209	41 616	42 025	42 436	42 849	43 264	43 681	20
21	44 100	44 521	44 944	45 369	45 796	46 225	46 656	47 089	47 524	47 961	21
22	48 400	48 841	49 284	49 729	50 176	50 625	51 076	51 529	51 984	52 441	22
23	52 900	53 361	53 824	54 289	54 756	55 225	55 696	56 169	56 644	57 121	23
24	57 600	58 081	58 564	59 049	59 536	60 025	60 516	61 009	61 504	62 001	24
25	62 500	63 001	63 504	64 009	64 516	65 025	65 536	66 049	66 564	67 081	25
26	67 600	68 121	68 644	69 169	69 696	70 225	70 756	71 289	71 824	72 361	26
27	72 900	73 441	73 984	74 529	75 076	75 625	76 176	76 729	77 284	77 841	27
28	78 400	78 961	79 524	80 089	80 656	81 225	81 796	82 369	82 944	83 521	28
29	84 100	84 681	85 264	85 849	86 436	87 025	87 616	88 209	88 804	89 401	29
30	90 000	90 601	91 204	91 809	92 416	93 025	93 636	94 249	94 864	95 481	30
31	96 100	96 721	97 344	97 969	98 596	99 225	99 856	100 489	101 124	101 761	31
32	102 400	103 041	103 684	104 329	104 976	105 625	106 276	106 929	107 584	108 241	32
33	108 900	109 561	110 224	110 889	111 556	112 225	112 896	113 569	114 244	114 921	33
34	115 600	116 281	116 964	117 649	118 336	119 025	119 716	120 409	121 104	121 801	34
35	122 500	123 201	123 904	124 609	125 316	126 025	126 736	127 449	128 164	128 881	35
36	129 600	130 321	131 044	131 769	132 496	133 225	133 956	134 689	135 424	136 161	36
37	136 900	137 641	138 384	139 129	139 876	140 625	141 376	142 129	142 884	143 641	37
38	144 400	145 161	145 924	146 689	147 456	148 225	148 996	149 769	150 544	151 321	38
39	152 100	152 881	153 664	154 449	155 236	156 025	156 816	157 609	158 404	159 201	39
40	160 000	160 801	161 604	162 409	163 216	164 025	164 836	165 649	166 464	167 281	40
41	168 100	168 921	169 744	170 569	171 396	172 225	173 056	173 889	174 724	175 561	41
42	176 400	177 241	178 084	178 929	179 776	180 625	181 476	182 329	183 184	184 041	42
43	184 900	185 761	186 624	187 489	188 356	189 225	190 096	190 969	191 844	192 721	43
44	193 600	194 481	195 364	196 249	197 136	198 025	198 916	199 809	200 704	201 601	44
45	202 500	203 401	204 304	205 209	206 116	207 025	207 936	208 849	209 764	210 681	45
46	211 600	212 521	213 444	214 369	215 296	216 225	217 156	218 089	219 024	219 961	46
47	220 900	221 841	222 784	223 729	224 676	225 625	226 576	227 529	228 484	229 441	47
48	230 400	231 361	232 324	233 289	234 256	235 225	236 196	237 169	238 144	239 121	48
49	240 100	241 081	242 064	243 049	244 036	245 025	246 016	247 009	248 004	249 001	49
50	250 000	251 001	252 004	253 009	254 016	255 025	256 036	257 049	258 064	259 081	50
51	260 100	261 121	262 144	263 169	264 196	265 225	266 256	267 289	268 324	269 361	51
52	270 400	271 441	272 484	273 529	274 576	275 625	276 676	277 729	278 784	279 841	52
53	280 900	281 961	283 024	284 089	285 156	286 225	287 296	288 369	289 444	290 521	53
54	291 600	292 681	293 764	294 849	295 936	297 025	298 116	299 209	300 304	301 401	54

n	0	1	2	3	4	5	6	7	8	9	n
55	302 500	303 601	304 704	305 809	306 916	308 025	309 136	310 249	311 364	312 431	55
56	313 600	314 721	315 844	316 969	318 096	319 225	320 356	321 489	322 624	323 761	56
57	324 900	326 041	327 184	328 329	329 476	330 625	331 776	332 929	334 084	335 241	57
58	336 400	337 561	338 724	339 889	341 056	342 225	343 396	344 569	345 744	346 921	58
59	348 100	349 281	350 464	351 649	352 836	354 025	355 216	356 409	357 604	358 801	59
60	360 000	361 201	362 404	363 609	364 816	366 025	367 236	368 449	369 664	370 881	60
61	372 100	373 321	374 544	375 769	376 996	378 225	379 456	380 689	381 924	383 161	61
62	384 400	385 641	386 884	388 129	389 376	390 625	391 876	393 129	394 384	395 641	62
63	396 900	398 161	399 424	400 689	401 956	403 225	404 496	405 769	407 044	408 321	63
64	409 600	410 881	412 164	413 449	414 736	416 025	417 316	418 609	419 904	421 201	64
65	422 500	423 801	425 104	426 409	427 716	429 025	430 336	431 649	432 964	434 281	65
66	435 600	436 921	438 244	439 569	440 896	442 225	443 556	444 889	446 224	447 561	66
67	448 900	450 241	451 584	452 929	454 276	455 625	456 976	458 329	459 684	461 041	67
68	462 400	463 761	465 124	466 489	467 856	469 225	470 596	471 969	473 344	474 721	68
69	476 100	477 481	478 864	480 249	481 636	483 025	484 416	485 809	487 204	488 601	69
70	490 000	491 401	492 804	494 209	495 616	497 025	498 436	499 849	501 264	502 681	70
71	504 100	505 521	506 944	508 369	509 796	511 225	512 656	514 089	515 524	516 961	71
72	518 400	519 841	521 284	522 729	524 176	525 625	527 076	528 529	529 984	531 441	72
73	532 900	534 361	535 824	537 289	538 756	540 225	541 696	543 169	544 644	546 121	73
74	547 600	549 081	550 564	552 049	553 536	555 025	556 516	558 009	559 504	561 001	74
75	562 500	564 001	565 504	567 009	568 516	570 025	571 536	573 049	574 564	576 081	75
76	577 600	579 121	580 644	582 169	583 696	585 225	586 756	588 289	589 824	591 361	76
77	592 900	594 441	595 984	597 529	599 076	600 625	602 176	603 729	605 284	606 841	77
78	608 400	609 961	611 524	613 089	614 656	616 225	617 796	619 369	620 944	622 521	78
79	624 100	625 681	627 264	628 849	630 436	632 025	633 616	635 209	636 804	638 401	79
80	640 000	641 601	643 204	644 809	646 416	648 025	649 636	651 249	652 864	654 481	80
81	656 100	657 721	659 344	660 969	662 596	664 225	665 856	667 489	669 124	670 761	81
82	672 400	674 041	675 684	677 329	678 976	680 625	682 276	683 929	685 584	687 241	82
83	688 900	690 561	692 224	693 889	695 556	697 225	698 896	700 569	702 244	703 921	83
84	705 600	707 281	708 964	710 649	712 336	714 025	715 716	717 409	719 104	720 801	84
85	722 500	724 201	725 904	727 609	729 316	731 025	732 736	734 449	736 164	737 881	85
86	739 600	741 321	743 044	744 769	746 496	748 225	749 956	751 689	753 424	755 161	86
87	756 900	758 641	760 384	762 129	763 876	765 625	767 376	769 129	770 884	772 641	87
88	774 400	776 161	777 924	779 689	781 456	783 225	784 996	786 769	788 544	790 321	88
89	792 100	793 881	795 664	797 449	799 236	801 025	802 816	804 609	806 404	808 201	89
90	810 000	811 801	813 604	815 409	817 216	819 025	820 836	822 649	824 464	826 281	90
91	828 100	829 921	831 744	833 569	835 396	837 225	839 056	840 889	842 724	844 561	91
92	846 400	848 241	850 084	851 929	853 776	855 625	857 476	859 329	861 184	863 041	92
93	864 900	866 761	868 624	870 489	872 356	874 225	876 096	877 969	879 844	881 721	93
94	883 600	885 481	887 364	889 249	891 136	893 025	894 916	896 809	898 704	900 601	94
95	902 500	904 401	906 304	908 209	910 116	912 025	913 936	915 849	917 764	919 681	95
96	921 600	923 521	925 444	927 369	929 296	931 225	933 156	935 089	937 024	938 961	96
97	940 900	942 841	944 784	946 729	948 676	950 625	952 576	954 529	956 484	958 441	97
98	960 400	962 381	964 324	966 269	968 216	970 165	972 116	974 169	976 144	978 121	98
99	980 100	982 081	984 064	986 049	988 036	990 025	992 016	994 009	996 004	998 001	99

(2) 开方表

 $\sqrt{n}$ 和 $\sqrt{10}$

n	0	1	2	3	4	5	6	7	8	9	n
10	10.000 31.623	10.050 31.780	10.100 31.937	10.149 32.094	10.198 32.249	10.247 32.404	10.296 32.558	10.344 32.711	10.392 32.863	10.440 33.015	10
11	10.488 33.166	10.536 33.317	10.583 33.466	10.630 33.615	10.677 33.764	10.724 33.912	10.770 34.059	10.817 34.205	10.863 34.351	10.909 34.496	11
12	10.954 34.641	11.000 34.785	11.045 34.928	11.091 35.071	11.136 35.214	11.180 35.355	11.225 35.496	11.269 35.637	11.314 35.777	11.358 35.917	12
13	11.402 36.056	11.446 36.194	11.489 36.332	11.533 36.469	11.576 36.606	11.619 36.742	11.662 36.878	11.705 37.014	11.747 37.148	11.790 37.283	13
14	11.832 37.417	11.874 37.550	11.916 37.683	11.958 37.815	12.000 37.947	12.042 38.079	12.083 38.210	12.124 38.341	12.166 38.471	12.207 38.601	14
15	12.247 38.780	12.288 38.859	12.329 38.967	12.369 39.115	12.410 39.243	12.450 39.370	12.490 39.497	12.530 39.623	12.570 39.749	12.610 39.875	15
16	12.649 40.000	12.689 40.125	12.728 40.249	12.767 40.373	12.806 40.497	12.845 40.620	12.884 40.743	12.923 40.866	12.961 40.988	13.000 41.110	16
17	13.038 41.231	13.077 41.352	13.115 41.473	13.153 41.593	13.191 41.713	13.229 41.833	13.266 41.952	13.304 42.071	13.342 42.190	13.379 42.308	17
18	13.410 42.426	13.454 42.544	13.491 42.661	13.528 42.778	13.565 42.895	13.601 43.012	13.638 43.128	13.675 43.243	13.711 43.359	13.748 43.474	18
19	13.784 43.589	13.820 43.704	13.856 43.818	13.892 43.932	13.928 44.045	13.964 44.159	14.000 44.272	14.036 44.385	14.071 44.497	14.107 44.609	19
20	14.142 44.721	14.177 44.833	14.213 44.944	14.248 45.056	14.283 45.166	14.318 45.277	14.353 45.387	14.387 45.497	14.422 45.607	14.457 45.717	20
21	14.491 45.826	14.526 45.935	14.560 46.043	14.595 46.152	14.629 46.260	14.663 46.368	14.697 46.476	14.731 46.583	14.765 46.690	14.799 46.797	21
22	14.832 46.904	14.866 47.011	14.900 47.117	14.933 47.223	14.967 47.329	15.000 47.434	15.033 47.539	15.067 47.645	15.100 47.749	15.133 47.854	22
23	15.166 47.958	15.199 48.062	15.232 48.166	15.264 48.270	15.297 48.374	15.330 48.477	15.362 48.580	15.395 48.683	15.427 48.785	15.460 48.888	23
24	15.492 48.990	15.524 49.092	15.556 49.193	15.588 49.295	15.620 49.396	15.652 49.497	15.684 49.598	15.716 49.699	15.748 49.800	15.780 49.900	24
25	15.811 50.000	15.843 50.100	15.875 50.200	15.906 50.299	15.937 50.398	15.969 50.498	16.000 50.596	16.031 50.695	16.062 50.794	16.093 50.892	25
26	16.125 50.990	16.155 51.088	16.186 51.186	16.217 51.284	16.248 51.381	16.279 51.478	16.310 51.575	16.340 51.672	16.371 51.769	16.401 51.865	26
27	16.432 51.962	16.462 52.058	16.492 52.154	16.523 52.249	16.553 52.345	16.583 52.440	16.613 52.536	16.643 52.631	16.673 52.726	16.703 52.820	27
28	16.733 52.915	16.763 53.009	16.793 53.104	16.823 53.198	16.852 53.292	16.882 53.385	16.912 53.479	16.941 53.572	16.971 53.666	17.000 53.759	28
29	17.029 53.852	17.059 53.944	17.088 54.037	17.117 54.129	17.146 54.222	17.176 54.314	17.205 54.406	17.234 54.493	17.263 54.589	17.292 54.681	29
30	17.321 54.772	17.349 54.863	17.378 54.955	17.407 55.045	17.436 55.136	17.464 55.227	17.493 55.317	17.521 55.408	17.550 55.498	17.578 55.588	30
31	17.607 55.678	17.635 55.767	17.664 55.857	17.692 55.946	17.720 56.036	17.748 56.125	17.776 56.214	17.804 56.303	17.833 56.391	17.861 56.480	31

[注] 上行为 $\sqrt{n}$ ，下行为 $\sqrt{10n}$ 。

<i>n</i>	0	1	2	3	4	5	6	7	8	9	<i>n</i>
32	17.889 56.569	17.916 56.657	17.944 56.745	17.972 56.833	18.000 56.921	18.023 57.009	18.055 57.096	18.083 57.184	18.111 57.271	18.138 57.359	32
33	18.166 57.446	18.193 57.533	18.221 57.619	18.248 57.706	18.276 57.793	18.303 57.879	18.330 57.966	18.358 58.052	18.385 58.138	18.412 58.224	33
34	18.439 58.310	18.466 58.395	18.493 58.481	18.520 58.566	18.547 58.652	18.574 58.737	18.601 58.822	18.628 58.907	18.655 58.992	18.682 59.076	34
35	18.708 59.161	18.735 59.245	18.762 59.330	18.788 59.414	18.815 59.498	18.841 59.582	18.868 59.666	18.894 59.749	18.921 59.833	18.947 59.917	35
36	18.974 60.000	19.000 60.083	19.026 60.166	19.053 60.249	19.079 60.332	19.105 60.415	19.131 60.498	19.157 60.581	19.183 60.663	19.209 60.745	36
37	19.235 60.828	19.261 60.910	19.287 60.992	19.313 61.074	19.339 61.156	19.365 61.237	19.391 61.319	19.416 61.400	19.442 61.482	19.468 61.563	37
38	19.494 61.644	19.519 61.725	19.545 61.806	19.570 61.887	19.596 61.968	19.621 62.048	19.647 62.129	19.672 62.209	19.698 62.290	19.723 62.370	38
39	19.748 62.450	19.774 62.530	19.799 62.610	19.824 62.690	19.849 62.769	19.875 62.849	19.900 62.929	19.925 63.008	19.950 63.087	19.975 63.166	39
40	20.000 63.246	20.025 63.325	20.050 63.403	20.075 63.482	20.100 63.561	20.125 63.640	20.149 63.718	20.174 63.797	20.199 63.875	20.224 63.953	40
41	20.248 64.031	20.273 64.109	20.298 64.187	20.322 64.265	20.347 64.343	20.372 64.420	20.396 64.498	20.421 64.576	20.445 64.653	20.469 64.730	41
42	20.494 64.807	20.518 64.885	20.543 64.962	20.567 65.038	20.591 65.115	20.616 65.192	20.640 65.269	20.664 65.345	20.688 65.422	20.712 65.498	42
43	20.736 65.574	20.761 65.651	20.785 65.727	20.809 65.803	20.833 65.879	20.857 65.955	20.881 66.030	20.905 66.106	20.928 66.182	20.952 66.257	43
44	20.976 66.332	21.000 66.408	21.024 66.483	21.048 66.558	21.071 66.633	21.095 66.708	21.119 66.783	21.142 66.858	21.166 66.933	21.190 67.007	44
45	21.213 67.082	21.237 67.157	21.260 67.231	21.284 67.305	21.307 67.380	21.331 67.454	21.354 67.528	21.378 67.602	21.401 67.676	21.424 67.750	45
46	21.448 67.823	21.471 67.897	21.494 67.971	21.517 68.044	21.541 68.118	21.564 68.191	21.587 68.264	21.610 68.337	21.633 68.411	21.656 68.484	46
47	21.679 68.557	21.703 68.629	21.726 68.702	21.749 68.775	21.772 68.848	21.794 68.920	21.817 68.993	21.840 69.065	21.863 69.138	21.886 69.210	47
48	21.909 69.282	21.932 69.354	21.954 69.426	21.977 69.498	22.000 69.570	22.023 69.642	22.045 69.714	22.068 69.785	22.091 69.857	22.113 69.929	48
49	22.136 70.000	22.159 70.071	22.181 70.143	22.204 70.214	22.226 70.285	22.249 70.356	22.271 70.427	22.293 70.493	22.316 70.569	22.338 70.640	49
50	22.361 70.711	22.383 70.781	22.405 70.852	22.428 70.922	22.450 70.993	22.472 71.063	22.494 71.134	22.517 71.204	22.539 71.274	22.561 71.344	50
51	22.583 71.414	22.605 71.484	22.627 71.554	22.650 71.624	22.672 71.694	22.694 71.764	22.716 71.833	22.738 71.903	22.760 71.972	22.782 72.042	51
52	22.804 72.111	22.825 72.180	22.847 72.250	22.869 72.319	22.891 72.388	22.913 72.457	22.935 72.526	22.956 72.595	22.978 72.664	23.000 72.732	52
53	23.022 72.801	23.043 72.870	23.065 72.938	23.087 73.007	23.108 73.075	23.130 73.144	23.152 73.212	23.173 73.280	23.195 73.348	23.216 73.417	53

<i>n</i>	0	1	2	3	4	5	6	7	8	9	<i>n</i>
54	23.238 73.485	23.259 73.553	23.281 73.621	23.302 73.689	23.324 73.756	23.345 73.824	23.367 73.892	23.388 73.959	23.409 74.027	23.431 74.095	54
55	23.452 74.162	23.473 74.229	23.495 74.297	23.516 74.364	23.537 74.431	23.558 74.498	23.580 74.565	23.601 74.632	23.622 74.699	23.643 74.766	55
56	23.664 74.833	23.685 74.900	23.707 74.967	23.728 75.033	23.749 75.100	23.770 75.166	23.791 75.233	23.812 75.299	23.833 75.366	23.854 75.432	56
57	23.875 75.498	23.896 75.565	23.917 75.631	23.937 75.697	23.958 75.763	23.979 75.829	24.000 75.895	24.021 75.961	24.042 76.026	24.062 76.092	57
58	24.083 76.158	24.104 76.223	24.125 76.289	24.145 76.354	24.166 76.420	24.187 76.485	24.207 76.551	24.228 76.616	24.249 76.681	24.269 76.746	58
59	24.290 76.811	24.310 76.877	24.331 76.942	24.352 77.006	24.372 77.071	24.393 77.136	24.413 77.201	24.434 77.266	24.454 77.330	24.474 77.395	59
60	24.495 77.460	24.515 77.524	24.536 77.589	24.556 77.653	24.576 77.717	24.597 77.782	24.617 77.846	24.637 77.919	24.658 77.974	24.678 78.038	60
61	24.698 78.102	24.718 78.166	24.739 78.230	24.759 78.294	24.779 78.358	24.799 78.422	24.819 78.486	24.839 78.549	24.860 78.613	24.880 78.677	61
62	24.900 78.740	24.920 78.804	24.940 78.867	24.960 78.930	24.980 78.994	25.000 79.057	25.020 79.120	25.040 79.183	25.060 79.246	25.080 79.310	62
63	25.100 79.373	25.120 79.436	25.140 79.498	25.159 79.561	25.179 79.624	25.199 79.687	25.219 79.750	25.239 79.812	25.259 79.875	25.278 79.937	63
64	25.298 80.000	25.318 80.062	25.338 80.125	25.357 80.187	25.377 80.250	25.397 80.312	25.417 80.374	25.436 80.436	25.456 80.498	25.475 80.561	64
65	25.495 80.623	25.515 80.685	25.534 80.747	25.554 80.808	25.573 80.870	25.593 80.932	25.612 80.994	25.632 81.056	25.652 81.117	25.671 81.179	65
66	25.690 81.240	25.710 81.302	25.729 81.363	25.749 81.425	25.768 81.486	25.788 81.548	25.807 81.609	25.826 81.670	25.846 81.731	25.865 81.792	66
67	25.884 81.854	25.904 81.915	25.923 81.976	25.942 82.037	25.962 82.098	25.981 82.158	26.000 82.219	26.019 82.280	26.038 82.341	26.058 82.401	67
68	26.077 82.462	26.096 82.523	26.115 82.583	26.134 82.644	26.153 82.704	26.173 82.765	26.192 82.825	26.211 82.885	26.230 82.946	26.249 83.006	68
69	26.268 83.066	26.287 83.126	26.306 83.187	26.325 83.247	26.344 83.307	26.363 83.367	26.382 83.427	26.401 83.487	26.420 83.546	26.439 83.606	69
70	26.458 83.666	26.476 83.726	26.495 83.785	26.514 83.845	26.533 83.905	26.552 83.964	26.571 84.024	26.589 84.083	26.608 84.143	26.627 84.202	70
71	26.646 84.261	26.665 84.321	26.683 84.380	26.702 84.439	26.721 84.499	26.739 84.558	26.758 84.617	26.777 84.676	26.796 84.735	26.814 84.794	71
72	26.833 84.853	26.851 84.912	26.870 84.971	26.889 85.029	26.907 85.088	26.926 85.147	26.944 85.206	26.963 85.264	26.981 85.323	27.000 85.381	72
73	27.019 85.440	27.037 85.499	27.055 85.557	27.074 85.615	27.092 85.674	27.111 85.732	27.129 85.790	27.148 85.849	27.166 85.907	27.185 85.965	73
74	27.203 86.023	27.221 86.081	27.240 86.139	27.258 86.197	27.276 86.255	27.295 86.313	27.313 86.371	27.331 86.429	27.350 86.487	27.368 86.545	74
75	27.386 86.603	27.404 86.660	27.423 86.718	27.441 86.776	27.459 86.833	27.477 86.891	27.495 86.948	27.514 87.006	27.532 87.063	27.550 87.121	75
76	27.568 87.178	27.586 87.235	27.604 87.293	27.622 87.350	27.641 87.407	27.659 87.464	27.677 87.521	27.695 87.579	27.713 87.636	27.731 87.693	76

n	0	1	2	3	4	5	6	7	8	9	n
77	27.749 87.750	27.767 87.807	27.785 87.864	27.803 87.920	27.821 87.977	27.839 88.034	27.857 88.091	27.875 88.148	27.893 88.204	27.911 88.261	77
78	27.928 88.318	27.946 88.374	27.964 88.431	27.982 88.487	28.000 88.544	28.018 88.600	28.036 88.657	28.054 88.713	28.071 88.769	28.089 88.826	78
79	28.107 88.832	28.125 88.898	28.142 88.994	28.160 89.051	28.178 89.107	28.196 89.163	28.213 89.219	28.231 89.275	28.249 89.331	28.267 89.387	79
80	28.284 89.443	28.302 89.499	28.320 89.554	28.337 89.610	28.355 89.666	28.373 89.722	28.390 89.778	28.408 89.833	28.425 89.889	28.443 89.944	80
81	28.460 90.000	28.478 90.056	28.496 90.111	28.513 90.167	28.531 90.222	28.548 90.277	28.566 90.333	28.583 90.388	28.601 90.443	28.618 90.499	81
82	28.636 90.554	28.653 90.609	28.671 90.664	28.688 90.719	28.705 90.774	28.723 90.830	28.740 90.885	28.758 90.940	28.775 90.995	28.792 91.049	82
83	28.810 91.104	28.827 91.159	28.844 91.214	28.862 91.269	28.879 91.324	28.896 91.378	28.914 91.433	28.931 91.488	28.948 91.542	28.965 91.597	83
84	28.983 91.652	29.000 91.706	29.017 91.761	29.034 91.815	29.052 91.869	29.069 91.924	29.086 91.978	29.103 92.033	29.120 92.087	29.138 92.141	84
85	29.155 92.195	29.172 92.250	29.189 92.304	29.206 92.358	29.223 92.412	29.240 92.466	29.257 92.520	29.275 92.574	29.292 92.628	29.309 92.682	85
86	29.326 92.736	29.343 92.790	29.360 92.844	29.377 92.898	29.394 92.952	29.411 93.005	29.428 93.059	29.445 93.113	29.462 93.167	29.479 93.220	86
87	29.496 93.274	29.513 93.327	29.530 93.381	29.547 93.434	29.563 93.488	29.580 93.541	29.597 93.595	29.614 93.648	29.631 93.702	29.648 93.755	87
88	29.665 93.808	29.682 93.862	29.698 93.915	29.715 93.968	29.732 94.021	29.749 94.074	29.766 94.128	29.783 94.181	29.799 94.234	29.816 94.287	88
89	29.833 94.340	29.850 94.393	29.866 94.446	29.883 94.499	29.900 94.552	29.917 94.604	29.933 94.657	29.950 94.710	29.967 94.763	29.983 94.816	89
90	30.000 94.868	30.017 94.921	30.033 94.974	30.050 95.026	30.067 95.079	30.083 95.131	30.100 95.184	30.116 95.237	30.133 95.289	30.150 95.341	90
91	30.166 95.394	30.183 95.446	30.199 95.499	30.216 95.551	30.232 95.603	30.249 95.656	30.265 95.708	30.282 95.760	30.299 95.812	30.315 95.864	91
92	30.332 95.917	30.343 95.969	30.364 96.021	30.381 96.073	30.397 96.125	30.414 96.177	30.430 96.229	30.447 96.281	30.463 96.333	30.480 96.385	92
93	30.496 96.437	30.512 96.488	30.529 96.540	30.545 96.592	30.561 96.644	30.578 96.695	30.594 96.747	30.610 96.799	30.627 96.850	30.643 96.902	93
94	30.659 96.954	30.676 97.005	30.692 97.057	30.708 97.108	30.725 97.160	30.741 97.211	30.757 97.263	30.773 97.314	30.790 97.365	30.806 97.417	94
95	30.822 97.468	30.838 97.519	30.854 97.570	30.871 97.622	30.887 97.673	30.903 97.724	30.919 97.775	30.935 97.826	30.952 97.877	30.968 97.929	95
96	30.984 97.980	31.000 98.031	31.016 98.082	31.032 98.133	31.048 98.184	31.064 98.234	31.081 98.285	31.097 98.336	31.113 98.387	31.129 98.438	96
97	31.145 98.489	31.161 98.539	31.177 98.590	31.193 98.641	31.209 98.691	31.225 98.742	31.241 98.793	31.257 98.843	31.273 98.894	31.289 98.944	97
98	31.305 98.995	31.321 99.045	31.337 99.096	31.353 99.146	31.369 99.197	31.385 99.247	31.401 99.298	31.417 99.348	31.432 99.398	31.448 99.448	98
99	31.464 99.499	31.480 99.549	31.496 99.599	31.512 99.649	31.528 99.700	31.544 99.750	31.559 99.800	31.575 99.850	31.591 99.900	31.607 99.950	99

(3) 倒数表

$$\frac{1}{x}$$

x	0	1	2	3	4	5	6	7	8	9	x
1.0	1.000 000	0.900 099	0.980 392	0.970 874	0.961 538	0.952 381	0.943 396	0.934 579	0.925 926	0.917 431	1.0
1.1	0.909 091	0.900 901	.892 857	.884 956	.877 193	.869 565	.862 069	.854 701	.847 458	.840 336	1.1
1.2	.833 333	.826 446	.819 672	.813 008	.806 452	.800 000	.793 651	.787 402	.781 259	.775 194	1.2
1.3	.769 231	.763 359	.757 576	.751 880	.746 269	.740 741	.735 294	.729 927	.724 638	.719 424	1.3
1.4	.714 286	.709 220	.704 225	.699 301	.694 444	.689 655	.684 932	.680 272	.675 676	.671 141	1.4
1.5	.666 667	.662 252	.657 895	.653 595	.649 351	.645 161	.641 026	.636 943	.632 911	.628 931	1.5
1.6	.625 000	.621 118	.617 284	.613 497	.609 756	.606 061	.602 410	.598 802	.595 238	.591 716	1.6
1.7	.588 235	.584 795	.581 395	.578 036	.574 713	.571 429	.568 182	.564 972	.561 798	.558 650	1.7
1.8	.555 556	.552 436	.549 451	.546 448	.543 478	.540 541	.537 634	.534 759	.531 915	.528 191	1.8
1.9	.525 316	.522 560	.520 883	.518 185	.515 464	.512 821	.510 204	.507 614	.505 051	.502 513	1.9
2.0	.500 000	.497 512	.495 050	.492 611	.490 196	.487 805	.485 437	.483 092	.480 769	.478 469	2.0
2.1	.476 190	.473 984	.471 698	.469 484	.467 290	.465 116	.462 963	.460 829	.458 716	.456 621	2.1
2.2	.454 545	.452 439	.450 450	.448 430	.446 429	.444 444	.442 478	.440 529	.438 596	.436 681	2.2
2.3	.434 783	.432 900	.431 034	.429 185	.427 350	.425 532	.423 729	.421 941	.420 168	.418 410	2.3
2.4	.416 667	.414 939	.413 223	.411 523	.409 836	.408 163	.406 504	.404 858	.403 226	.401 606	2.4
2.5	.400 000	.398 406	.396 825	.395 257	.393 701	.392 157	.390 625	.389 105	.387 597	.386 100	2.5
2.6	.384 645	.383 142	.381 679	.380 222	.378 788	.377 358	.375 940	.374 532	.373 134	.371 747	2.6
2.7	.370 370	.369 004	.367 647	.366 300	.364 964	.363 636	.362 319	.361 011	.359 712	.358 423	2.7
2.8	.357 143	.355 872	.354 610	.353 357	.352 118	.350 877	.349 650	.348 432	.347 222	.346 021	2.8
2.9	.344 828	.343 643	.342 466	.341 297	.340 136	.338 983	.337 838	.336 700	.335 570	.334 448	2.9
3.0	.333 333	.332 226	.331 126	.330 033	.328 947	.327 869	.326 797	.325 733	.324 675	.323 625	3.0
3.1	.322 581	.321 543	.320 513	.319 489	.318 471	.317 460	.316 456	.315 457	.314 465	.313 489	3.1
3.2	.312 500	.311 526	.310 559	.309 598	.308 642	.307 692	.306 748	.305 810	.304 878	.303 951	3.2
3.3	.303 030	.302 115	.301 205	.300 300	.299 401	.298 507	.297 619	.296 736	.295 858	.294 985	3.3
3.4	.294 118	.293 255	.292 398	.291 545	.290 698	.289 855	.289 017	.288 184	.287 356	.286 533	3.4
3.5	.285 714	.284 900	.284 091	.283 286	.282 486	.281 690	.280 899	.280 112	.279 330	.278 552	3.5
3.6	.277 778	.277 008	.276 243	.275 482	.274 735	.273 973	.273 224	.272 480	.271 739	.271 003	3.6
3.7	.270 270	.269 542	.268 817	.268 097	.267 380	.266 667	.265 957	.265 252	.264 550	.263 852	3.7
3.8	.263 158	.262 467	.261 780	.261 097	.260 417	.259 740	.259 067	.258 393	.257 732	.257 069	3.8
3.9	.256 410	.255 754	.255 102	.254 453	.253 807	.253 165	.252 525	.251 889	.251 256	.250 627	3.9
4.0	.250 000	.249 377	.248 756	.248 139	.247 525	.246 914	.246 305	.245 700	.245 098	.244 499	4.0
4.1	.243 902	.243 309	.242 718	.242 131	.241 546	.240 964	.240 385	.239 803	.239 234	.238 663	4.1
4.2	.238 095	.237 530	.236 967	.236 407	.235 849	.235 294	.234 742	.234 192	.233 645	.233 100	4.2
4.3	.232 558	.232 019	.231 481	.230 947	.230 415	.229 885	.229 358	.228 838	.228 311	.227 790	4.3
4.4	.227 273	.226 757	.226 244	.225 734	.225 225	.224 719	.224 215	.223 714	.223 214	.222 717	4.4
4.5	.222 222	.221 729	.221 239	.220 751	.220 264	.219 780	.219 298	.218 818	.218 341	.217 865	4.5
4.6	.217 391	.216 920	.216 450	.215 983	.215 517	.215 054	.214 592	.214 139	.213 675	.213 220	4.6
4.7	.212 766	.212 314	.211 864	.211 416	.210 970	.210 526	.210 084	.209 644	.209 205	.208 768	4.7
4.8	.208 333	.207 900	.207 469	.207 039	.206 612	.206 186	.205 761	.205 339	.204 918	.204 499	4.8
4.9	.204 052	.203 666	.203 252	.202 840	.202 429	.202 020	.201 613	.201 207	.200 803	.200 401	4.9
5.0	.200 000	.199 601	.199 205	.198 807	.198 412	.198 020	.197 628	.197 239	.196 850	.196 464	5.0
5.1	.196 078	.195 695	.195 312	.194 932	.194 553	.194 175	.193 798	.193 424	.193 050	.192 678	5.1
5.2	.192 308	.191 939	.191 571	.191 205	.190 840	.190 476	.190 114	.189 753	.189 394	.189 036	5.2
5.3	.188 679	.188 324	.187 970	.187 617	.187 266	.186 916	.186 567	.186 220	.185 874	.185 529	5.3
5.4	.185 185	.184 843	.184 502	.184 162	.183 824	.183 487	.183 150	.182 815	.182 482	.182 149	5.4

#	0	1	2	3	4	5	6	7	8	9	#
5.5	0.181 818	0.181 488	0.181 159	0.180 832	0.180 505	0.180 180	0.179 856	0.179 533	0.179 211	0.178 891	5.5
5.6	.178 571	.178 253	.177 936	.177 620	.177 305	.176 991	.176 678	.176 367	.176 056	.175 747	5.6
5.7	.175 439	.175 131	.174 825	.174 520	.174 216	.173 913	.173 611	.173 310	.173 010	.172 712	5.7
5.8	.172 414	.172 117	.171 821	.171 527	.171 233	.170 940	.170 648	.170 358	.170 068	.169 779	5.8
5.9	.169 492	.169 205	.168 919	.168 634	.168 350	.168 067	.167 785	.167 504	.167 224	.166 945	5.9
6.0	.166 667	.166 389	.166 113	.165 837	.165 563	.165 289	.165 017	.164 745	.164 474	.164 204	6.0
6.1	.163 934	.163 666	.163 399	.163 132	.162 866	.162 602	.162 338	.162 075	.161 812	.161 551	6.1
6.2	.161 290	.161 031	.160 772	.160 514	.160 256	.160 000	.159 744	.159 490	.159 236	.158 983	6.2
6.3	.158 730	.158 479	.158 228	.157 978	.157 729	.157 480	.157 233	.156 988	.156 740	.156 495	6.3
6.4	.156 250	.156 006	.155 763	.155 521	.155 280	.155 039	.154 799	.154 560	.154 321	.154 083	6.4
6.5	.153 846	.153 610	.153 374	.153 139	.152 905	.152 672	.152 439	.152 207	.151 976	.151 745	6.5
6.6	.151 515	.151 286	.151 057	.150 830	.150 602	.150 376	.150 150	.149 925	.149 701	.149 477	6.6
6.7	.149 254	.149 031	.148 810	.148 583	.148 368	.148 143	.147 929	.147 710	.147 493	.147 275	6.7
6.8	.147 059	.146 848	.146 628	.146 413	.146 199	.145 985	.145 773	.145 560	.145 349	.145 138	6.8
6.9	.144 928	.144 718	.144 509	.144 300	.144 092	.143 885	.143 678	.143 472	.143 268	.143 062	6.9
7.0	.142 857	.142 653	.142 450	.142 248	.142 045	.141 844	.141 643	.141 443	.141 243	.141 044	7.0
7.1	.140 845	.140 647	.140 449	.140 252	.140 056	.139 860	.139 665	.139 470	.139 276	.139 082	7.1
7.2	.138 889	.138 696	.138 504	.138 313	.138 122	.137 931	.137 741	.137 552	.137 363	.137 174	7.2
7.3	.136 986	.136 799	.136 612	.136 426	.136 240	.136 054	.135 870	.135 685	.135 501	.135 318	7.3
7.4	.135 135	.134 953	.134 771	.134 590	.134 409	.134 228	.134 048	.133 869	.133 690	.133 511	7.4
7.5	.133 333	.133 156	.132 979	.132 802	.132 626	.132 450	.132 275	.132 100	.131 926	.131 752	7.5
7.6	.131 579	.131 403	.131 234	.131 062	.130 890	.130 719	.130 548	.130 378	.130 203	.130 030	7.6
7.7	.129 870	.129 702	.129 534	.129 363	.129 193	.129 022	.128 856	.128 700	.128 535	.128 370	7.7
7.8	.128 205	.128 041	.127 877	.127 714	.127 551	.127 389	.127 226	.127 065	.126 904	.126 742	7.8
7.9	.126 582	.126 422	.126 263	.126 103	.125 945	.125 786	.125 628	.125 471	.125 313	.125 156	7.9
8.0	.125 060	.124 844	.124 688	.124 533	.124 378	.124 224	.124 069	.123 916	.123 762	.123 609	8.0
8.1	.123 457	.123 305	.123 153	.123 001	.122 850	.122 699	.122 549	.122 398	.122 240	.122 100	8.1
8.2	.121 951	.121 803	.121 655	.121 507	.121 359	.121 212	.121 065	.120 919	.120 773	.120 627	8.2
8.3	.120 482	.120 337	.120 192	.120 043	.119 894	.119 760	.119 617	.119 474	.119 332	.119 190	8.3
8.4	.119 043	.118 906	.118 765	.118 624	.118 483	.118 343	.118 203	.118 064	.117 925	.117 786	8.4
8.5	.117 647	.117 509	.117 371	.117 233	.117 096	.116 959	.116 822	.116 686	.116 550	.116 412	8.5
8.6	.116 279	.116 144	.116 009	.115 875	.115 741	.115 607	.115 473	.115 340	.115 207	.115 075	8.6
8.7	.114 943	.114 811	.114 679	.114 548	.114 413	.114 288	.114 155	.114 025	.113 895	.113 766	8.7
8.8	.113 636	.113 507	.113 379	.113 250	.113 122	.112 994	.112 867	.112 740	.112 613	.112 486	8.8
8.9	.112 360	.112 233	.112 103	.111 982	.111 857	.111 732	.111 607	.111 483	.111 359	.111 235	8.9
9.0	.111 111	.110 988	.110 865	.110 742	.110 619	.110 497	.110 375	.110 254	.110 132	.110 011	9.0
9.1	.109 890	.109 769	.109 649	.109 529	.109 409	.109 290	.109 170	.109 051	.108 932	.108 814	9.1
9.2	.108 696	.108 578	.108 460	.108 342	.108 225	.108 108	.107 991	.107 875	.107 759	.107 643	9.2
9.3	.107 527	.107 411	.107 296	.107 181	.107 066	.106 952	.106 838	.106 724	.106 610	.106 496	9.3
9.4	.106 383	.106 270	.106 157	.106 045	.105 932	.105 820	.105 708	.105 597	.105 485	.105 374	9.4
9.5	.105 263	.105 152	.105 042	.104 932	.104 822	.104 712	.104 603	.104 493	.104 384	.104 275	9.5
9.6	.104 167	.104 058	.103 950	.103 842	.103 734	.103 627	.103 520	.103 413	.103 306	.103 199	9.6
9.7	.103 093	.102 987	.102 881	.102 775	.102 669	.102 564	.102 459	.102 354	.102 249	.102 145	9.7
9.8	.102 041	.101 937	.101 833	.101 729	.101 626	.101 523	.101 420	.101 317	.101 215	.101 112	9.8
9.9	.101 010	.100 908	.100 806	.100 705	.100 604	.100 503	.100 402	.100 301	.100 200	.100 100	9.9

2.1.2 常用对数表

 $\log n$

n	0	1	2	3	4	5	6	7	8	9	n
10	000 00	004 82	008 60	012 84	017 03	021 19	025 31	029 38	033 42	037 43	10
11	041 39	045 32	049 22	053 08	056 90	060 70	064 46	068 19	071 88	075 55	11
12	079 18	082 79	086 36	089 91	093 42	096 91	100 37	103 80	107 21	110 59	12
13	113 94	117 27	120 57	123 85	127 10	130 33	133 54	136 72	139 88	143 01	13
14	146 13	149 22	152 29	155 34	158 36	161 37	164 35	167 32	170 26	173 19	14
15	176 09	178 98	181 84	184 69	187 52	190 33	193 12	195 90	198 66	201 40	15
16	204 12	206 83	209 52	212 19	214 84	217 48	220 11	222 72	225 31	227 89	16
17	230 45	233 00	235 53	238 05	240 55	243 04	245 51	247 97	250 42	252 85	17
18	255 27	257 68	260 07	262 45	264 82	267 17	269 51	271 84	274 16	276 46	18
19	278 75	281 03	283 30	285 56	287 80	290 03	292 26	294 47	296 67	298 85	19
20	301 03	303 20	305 35	307 50	309 63	311 75	313 87	315 97	318 06	320 15	20
21	322 22	324 28	326 34	328 38	330 41	332 44	334 45	336 46	338 46	340 44	21
22	342 42	344 39	346 35	348 30	350 25	352 18	354 11	356 03	357 93	359 84	22
23	361 73	363 61	365 49	367 36	369 22	371 07	372 91	374 75	376 58	378 40	23
24	380 21	382 02	383 82	385 61	387 39	389 17	390 94	392 70	394 45	396 20	24
25	397 94	399 67	401 40	403 12	404 83	406 54	408 24	409 93	411 62	413 30	25
26	414 97	416 64	418 30	419 96	421 60	423 25	424 88	426 51	428 13	429 75	26
27	431 36	432 97	434 57	436 16	437 75	439 33	440 91	442 48	444 04	445 60	27
28	447 16	448 71	450 25	451 79	453 32	454 84	456 37	457 88	459 39	460 90	28
29	462 40	463 89	465 38	466 87	468 35	469 82	471 29	472 76	474 22	475 67	29
30	477 12	478 67	480 01	481 44	482 87	484 30	485 72	487 14	488 55	489 96	30
31	491 36	492 76	494 15	495 54	496 93	498 31	499 69	501 06	502 43	503 79	31
32	505 15	506 51	507 86	509 20	510 55	511 88	513 22	514 55	515 87	517 20	32
33	518 51	519 83	521 14	522 44	523 75	525 04	526 34	527 63	528 92	530 20	33
34	531 48	532 75	534 03	535 29	536 56	537 82	539 08	540 33	541 58	542 83	34
35	544 07	545 31	546 54	547 77	549 00	550 23	551 45	552 67	553 88	555 09	35
36	556 30	557 51	558 71	559 91	561 10	562 29	563 48	564 67	565 85	567 03	36
37	568 20	569 37	570 54	571 71	572 87	574 03	575 19	576 34	577 49	578 64	37
38	579 73	580 92	582 06	583 20	584 33	585 46	586 59	587 71	588 83	589 95	38
39	591 06	592 18	593 29	594 39	595 50	596 60	597 70	598 79	599 88	600 97	39
40	602 06	603 14	604 23	605 31	606 38	607 46	608 53	609 59	610 66	611 72	40
41	612 78	613 84	614 90	615 95	617 00	618 05	619 09	620 14	621 18	622 21	41
42	623 25	624 28	625 31	626 34	627 37	628 39	629 41	630 43	631 44	632 46	42
43	633 47	634 48	635 48	636 49	637 49	638 49	639 49	640 48	641 47	642 46	43
44	643 45	644 44	645 42	646 40	647 38	648 36	649 33	650 31	651 28	652 25	44
45	653 21	654 18	655 14	656 10	657 06	658 01	658 96	659 92	660 87	661 81	45
46	662 76	663 70	664 64	665 58	666 52	667 45	668 39	669 32	670 25	671 17	46
47	672 10	673 02	673 94	674 86	675 78	676 69	677 61	678 52	679 43	680 34	47
48	681 24	682 15	683 05	683 95	684 85	685 74	686 64	687 53	688 42	689 31	48
49	690 20	691 08	691 97	692 85	693 73	694 61	695 48	696 36	697 23	698 10	49
50	698 97	699 84	700 70	701 57	702 43	703 29	704 15	705 01	705 86	706 72	50
51	707 57	708 42	709 27	710 12	710 96	711 81	712 65	713 49	714 33	715 17	51
52	716 00	716 84	717 67	718 50	719 33	720 16	720 99	721 81	722 63	723 46	52
53	724 28	725 09	725 91	726 73	727 54	728 35	729 16	729 97	730 78	731 59	53
54	732 39	733 20	734 00	734 80	735 60	736 40	737 19	737 99	738 78	739 57	54

<i>n</i>	0	1	2	3	4	5	6	7	8	9	<i>n</i>
55	740 36	741 15	741 94	742 73	743 51	744 29	745 07	745 86	746 63	747 41	55
56	748 19	748 96	749 74	750 51	751 28	752 05	752 82	753 58	754 35	755 11	56
57	755 87	756 64	757 40	758 15	758 91	759 67	760 42	761 18	761 93	762 68	57
58	763 43	764 18	764 92	765 67	766 41	767 16	767 90	768 64	769 38	770 12	58
59	770 85	771 59	772 32	773 05	773 79	774 52	775 25	775 97	776 70	777 43	59
60	778 15	778 87	779 60	780 32	781 04	781 76	782 47	783 19	783 90	784 62	60
61	785 33	786 04	786 75	787 46	788 17	788 88	789 58	790 29	790 99	791 69	61
62	792 39	793 09	793 79	794 49	795 18	795 88	796 57	797 27	797 96	798 65	62
63	799 34	800 03	800 72	801 40	802 09	802 77	803 46	804 14	804 82	805 50	63
64	806 18	806 86	807 54	808 21	808 89	809 56	810 23	810 90	811 58	812 24	64
65	812 91	813 53	814 25	814 91	815 58	816 24	816 90	817 57	818 23	818 89	65
66	819 54	820 20	820 86	821 51	822 17	822 82	823 47	824 13	824 78	825 43	66
67	826 07	826 72	827 37	828 02	828 66	829 30	829 95	830 59	831 23	831 87	67
68	832 51	833 15	833 78	834 42	835 06	835 69	836 32	836 96	837 59	838 22	68
69	838 85	839 48	840 11	840 73	841 36	841 98	842 61	843 23	843 86	844 48	69
70	845 10	845 72	846 34	846 96	847 57	848 19	848 80	849 42	850 03	850 65	70
71	851 26	851 87	852 48	853 09	853 70	854 31	854 91	855 52	856 12	856 73	71
72	857 33	857 94	858 54	859 14	859 74	860 34	860 94	861 53	862 13	862 73	72
73	863 32	863 92	864 51	865 10	865 70	866 29	866 88	867 47	868 06	868 64	73
74	869 23	869 82	870 40	870 99	871 57	872 16	872 74	873 32	873 90	874 48	74
75	875 06	875 64	876 22	876 79	877 37	877 95	878 52	879 10	879 67	880 24	75
76	880 81	881 38	881 95	882 52	883 09	883 66	884 23	884 80	885 36	885 93	76
77	886 49	887 05	887 62	888 18	888 74	889 30	889 86	890 42	890 98	891 54	77
78	892 09	892 65	893 21	893 76	894 32	894 87	895 42	895 97	896 53	897 08	78
79	897 63	898 18	898 73	899 27	899 82	900 37	900 91	901 46	902 00	902 55	79
80	903 09	903 63	904 17	904 72	905 26	905 80	906 34	906 87	907 41	907 95	80
81	908 49	909 02	909 56	910 09	910 62	911 16	911 69	912 22	912 75	913 28	81
82	913 81	914 34	914 87	915 40	915 93	916 45	916 98	917 51	918 03	918 55	82
83	919 08	919 60	920 12	920 65	921 17	921 69	922 21	922 73	923 24	923 76	83
84	924 28	924 80	925 31	925 83	926 34	926 86	927 37	927 88	928 40	928 91	84
85	929 42	929 93	930 44	930 95	931 46	931 97	932 47	932 98	933 49	933 99	85
86	934 50	935 00	935 51	936 01	936 51	937 02	937 52	938 02	938 52	939 02	86
87	939 52	940 02	940 52	941 01	941 51	942 01	942 50	943 00	943 49	943 99	87
88	944 48	944 98	945 47	945 96	946 45	946 94	947 43	947 92	948 41	948 90	88
89	949 39	949 88	950 36	950 85	951 34	951 82	952 31	952 79	953 28	953 76	89
90	954 24	954 72	955 21	955 69	956 17	956 65	957 13	957 61	958 09	958 56	90
91	959 04	959 52	959 99	960 47	960 95	961 42	961 90	962 37	962 84	963 32	91
92	963 79	964 26	964 73	965 20	965 67	966 14	966 61	967 08	967 55	968 02	92
93	968 48	968 95	969 42	969 88	970 35	970 81	971 28	971 74	972 20	972 67	93
94	973 13	973 59	974 05	974 51	974 97	975 43	975 89	976 35	976 81	977 27	94
95	977 72	978 18	978 64	979 09	979 55	980 00	980 46	980 91	981 37	981 82	95
96	982 27	982 72	983 18	983 63	984 08	984 53	984 98	985 43	985 88	986 32	96
97	986 77	987 22	987 67	988 11	988 56	989 00	989 45	989 89	990 34	990 78	97
98	991 23	991 67	992 11	992 55	993 00	993 44	993 88	994 32	994 76	995 20	98
99	995 64	996 07	996 51	996 95	997 39	997 82	998 26	998 70	999 13	999 57	99

2.1.3 自然对数表

ln

x	0	1	2	3	4	5	6	7	8	9	x
0.10	2.30259	2.29383	2.28507	2.27630	2.26753	2.25877	2.24999	2.24122	2.23245	2.22368	0.10
0.11	2.20727	.19823	.18928	.18037	.17156	.16282	.15417	.14558	.13707	.12863	0.11
0.12	2.12025	.11196	.10378	.09567	.08747	.07944	.07147	.06357	.05573	.04794	0.12
0.13	2.04022	.03256	.02495	.01741	.00992	.00248	1.99510	1.98777	1.98050	1.97328	0.13
0.14	1.96611	1.95900	1.95193	1.94491	1.93794	1.93102	.92415	.91732	.91054	.90381	0.14
0.15	1.89712	.89048	.88387	.87732	.87080	.86433	.85790	.85151	.84516	.83885	0.15
0.16	1.83258	.82635	.82016	.81401	.80789	.80181	.79577	.78976	.78379	.77786	0.16
0.17	1.77196	.76609	.76026	.75448	.74874	.74307	.73747	.73191	.72639	.72091	0.17
0.18	1.71480	.70926	.70375	.69827	.69282	.68740	.68201	.67665	.67131	.66601	0.18
0.19	1.66073	.65548	.65026	.64507	.63990	.63476	.62964	.62455	.61949	.61445	0.19
0.20	1.60944	.60445	.59949	.59455	.58964	.58475	.57988	.57504	.57022	.56542	0.20
0.21	1.56065	.55590	.55117	.54646	.54178	.53712	.53248	.52786	.52326	.51868	0.21
0.22	1.51413	.50959	.50508	.50058	.49611	.49165	.48722	.48281	.47841	.47403	0.22
0.23	1.46968	.46534	.46102	.45672	.45243	.44817	.44392	.43970	.43548	.43129	0.23
0.24	1.42712	.42296	.41882	.41469	.41059	.40650	.40242	.39837	.39433	.39030	0.24
0.25	1.38629	.38230	.37833	.37437	.37042	.36649	.36258	.35868	.35480	.35093	0.25
0.26	1.34707	.34328	.33941	.33556	.33171	.32788	.32406	.32025	.31645	.31264	0.26
0.27	1.30933	.30564	.30195	.29828	.29463	.29093	.28735	.28374	.28013	.27654	0.27
0.28	1.27297	.26940	.26585	.26231	.25878	.25527	.25176	.24827	.24479	.24133	0.28
0.29	1.23787	.23448	.23100	.22758	.22418	.22078	.21740	.21403	.21066	.20731	0.29
0.30	1.20397	.20065	.19733	.19402	.19073	.18744	.18417	.18091	.17766	.17441	0.30
0.31	1.17118	.16796	.16475	.16155	.15836	.15518	.15201	.14885	.14570	.14256	0.31
0.32	1.13943	.13631	.13320	.13010	.12701	.12393	.12086	.11780	.11474	.11170	0.32
0.33	1.10866	.10564	.10262	.09961	.09661	.09362	.09064	.08767	.08471	.08176	0.33
0.34	1.07881	.07587	.07294	.07002	.06711	.06421	.06132	.05843	.05555	.05268	0.34
0.35	1.04982	.04697	.04412	.04129	.03846	.03564	.03282	.03002	.02722	.02443	0.35
0.36	1.02165	.01883	.01611	.01335	.01060	.00786	.00512	.00239	0.99967	0.99696	0.36
0.37	0.99425	0.99155	0.98886	0.98618	0.98350	0.98083	0.97817	0.97551	.97286	.97022	0.37
0.38	0.96753	.96498	.96243	.95987	.95732	.95477	.95222	.94967	.94712	.94458	0.38
0.39	0.94161	.93905	.93649	.93395	.93140	.92887	.92634	.92382	.92130	.91879	0.39
0.40	0.91629	.91379	.91130	.90882	.90634	.90387	.90140	.89894	.89649	.89404	0.40
0.41	0.89160	.88918	.88673	.88431	.88189	.87948	.87707	.87467	.87227	.86988	0.41
0.42	0.86750	.86512	.86275	.86038	.85802	.85567	.85332	.85097	.84863	.84630	0.42
0.43	0.84397	.84165	.83933	.83702	.83471	.83241	.83011	.82782	.82554	.82326	0.43
0.44	0.82098	.81871	.81645	.81419	.81193	.80968	.80744	.80520	.80296	.80073	0.44
0.45	0.79851	.79629	.79407	.79186	.78966	.78746	.78526	.78307	.78089	.77871	0.45
0.46	0.77653	.77436	.77219	.77003	.76787	.76572	.76357	.76143	.75929	.75715	0.46
0.47	0.75502	.75289	.75078	.74866	.74655	.74444	.74234	.74024	.73814	.73605	0.47
0.48	0.73397	.73189	.72981	.72774	.72567	.72361	.72155	.71949	.71744	.71539	0.48
0.49	0.71335	.71131	.70928	.70725	.70522	.70320	.70118	.69917	.69716	.69515	0.49
0.50	0.69315	.69115	.68916	.68717	.68518	.68320	.68122	.67924	.67727	.67531	0.50
0.51	0.67334	.67139	.66943	.66748	.66553	.66359	.66165	.65971	.65778	.65585	0.51
0.52	0.65393	.65201	.65009	.64817	.64626	.64436	.64245	.64055	.63866	.63677	0.52
0.53	0.63488	.63299	.63111	.62923	.62736	.62549	.62362	.62176	.61990	.61804	0.53
0.54	0.61619	.61434	.61249	.61065	.60881	.60697	.60514	.60331	.60148	.59966	0.54

[注] 表内对数值皆取负值

n	1	2	3	4	5	6	7	8	9	n
$\ln 10^n$	2.30259	4.60517	6.90776	9.21034	11.51293	13.81551	16.11810	18.42068	20.72327	$\ln 10^n$

x	0	1	2	3	4	5	6	7	8	9	x
0.55	0.597 84	0.596 02	0.594 21	0.592 40	0.590 59	0.588 79	0.586 99	0.585 19	0.583 40	0.581 61	0.55
0.56	0.579 82	.578 03	.576 25	.574 48	.572 70	.570 93	.569 16	.567 40	.565 63	.563 87	0.56
0.57	0.562 12	.560 37	.558 62	.556 87	.555 13	.553 39	.551 65	.549 91	.548 18	.546 45	0.57
0.58	0.544 73	.543 00	.541 28	.539 57	.537 85	.536 14	.534 44	.532 73	.531 03	.529 33	0.58
0.59	0.527 63	.525 94	.524 25	.522 56	.520 88	.519 19	.517 51	.515 84	.514 16	.512 49	0.59
0.60	0.510 83	.509 16	.507 50	.505 84	.504 18	.502 53	.500 88	.499 23	.497 58	.495 94	0.60
0.61	0.494 30	.492 66	.491 02	.489 39	.487 76	.486 13	.484 51	.482 89	.481 27	.479 65	0.61
0.62	0.478 04	.476 42	.474 82	.473 21	.471 60	.470 00	.468 40	.466 81	.465 22	.463 62	0.62
0.63	0.462 04	.460 45	.458 87	.457 28	.455 71	.454 13	.452 56	.450 99	.449 42	.447 85	0.63
0.64	0.446 29	.444 78	.443 17	.441 61	.440 06	.438 50	.436 96	.435 41	.433 86	.432 32	0.64
0.65	0.430 78	.429 25	.427 71	.426 18	.424 65	.423 12	.421 59	.420 07	.418 55	.417 03	0.65
0.66	0.415 52	.414 00	.412 49	.410 98	.409 47	.407 97	.406 47	.404 97	.403 47	.401 87	0.66
0.67	0.403 48	.398 99	.397 50	.396 01	.394 53	.393 04	.391 56	.390 08	.388 61	.387 13	0.67
0.68	0.385 66	.384 19	.382 73	.381 26	.379 80	.378 34	.376 88	.375 42	.373 97	.372 51	0.68
0.69	0.371 06	.369 62	.368 17	.366 73	.365 28	.363 84	.362 41	.360 97	.359 54	.358 10	0.69
0.70	0.356 67	.355 25	.353 82	.352 40	.350 98	.349 56	.348 14	.346 72	.345 31	.343 90	0.70
0.71	0.342 49	.341 08	.339 68	.338 27	.336 87	.335 47	.334 08	.332 68	.331 29	.329 89	0.71
0.72	0.328 50	.327 12	.325 73	.324 35	.322 96	.321 58	.320 21	.318 83	.317 45	.316 08	0.72
0.73	0.314 71	.313 34	.311 97	.310 61	.309 25	.307 88	.306 53	.305 17	.303 81	.302 46	0.73
0.74	0.301 11	.299 75	.298 41	.297 06	.295 71	.294 37	.293 03	.291 69	.290 35	.289 02	0.74
0.75	0.287 68	.286 35	.285 02	.283 69	.282 36	.281 04	.279 71	.278 39	.277 07	.275 75	0.75
0.76	0.274 44	.273 12	.271 81	.270 50	.269 19	.267 88	.266 57	.265 27	.263 97	.262 66	0.76
0.77	0.261 36	.260 07	.258 77	.257 48	.256 18	.254 89	.253 60	.252 31	.251 03	.249 74	0.77
0.78	0.248 46	.247 18	.245 99	.244 82	.243 35	.242 07	.240 80	.239 53	.238 26	.236 99	0.78
0.79	0.235 72	.234 46	.233 19	.231 93	.230 67	.229 41	.228 16	.226 90	.225 65	.224 39	0.79
0.80	0.223 14	.221 89	.220 65	.219 40	.218 16	.216 91	.215 67	.214 43	.213 19	.211 96	0.80
0.81	0.210 72	.209 49	.208 25	.207 02	.205 79	.204 57	.203 34	.202 12	.200 89	.199 67	0.81
0.82	0.198 45	.197 23	.196 01	.194 80	.193 58	.192 37	.191 16	.189 95	.188 74	.187 54	0.82
0.83	0.186 33	.185 13	.183 92	.182 72	.181 52	.180 32	.179 13	.177 93	.176 74	.175 54	0.83
0.84	0.174 35	.173 16	.171 98	.170 79	.169 60	.168 42	.167 24	.166 05	.164 87	.163 70	0.84
0.85	0.162 52	.161 34	.160 17	.159 00	.157 82	.156 65	.155 48	.154 32	.153 15	.151 99	0.85
0.86	0.150 82	.149 66	.148 50	.147 34	.146 18	.145 03	.143 87	.142 72	.141 56	.140 41	0.86
0.87	0.139 26	.138 11	.136 97	.135 82	.134 67	.133 53	.132 39	.131 25	.130 11	.128 97	0.87
0.88	0.127 83	.126 70	.125 56	.124 43	.123 30	.122 17	.121 04	.119 91	.118 78	.117 66	0.88
0.89	0.116 53	.115 41	.114 29	.113 17	.112 05	.110 93	.109 81	.108 70	.107 59	.106 47	0.89
0.90	0.105 36	.104 25	.103 14	.102 03	.100 93	.099 82	.098 72	.097 61	.096 51	.095 41	0.90
0.91	0.094 31	.093 21	.092 12	.091 02	.089 92	.088 83	.087 74	.086 65	.085 56	.084 47	0.91
0.92	0.083 39	.082 30	.081 21	.080 13	.079 04	.077 96	.076 88	.075 80	.074 72	.073 65	0.92
0.93	0.072 57	.071 50	.070 42	.069 35	.068 28	.067 21	.066 14	.065 07	.064 01	.062 94	0.93
0.94	0.061 88	.060 81	.059 75	.058 69	.057 63	.056 57	.055 51	.054 46	.053 40	.052 35	0.94
0.95	0.051 29	.050 24	.049 19	.048 14	.047 09	.046 04	.045 00	.043 95	.042 91	.041 86	0.95
0.96	0.040 82	.039 78	.038 74	.037 70	.036 66	.035 63	.034 59	.033 55	.032 52	.031 49	0.96
0.97	0.030 46	.029 43	.028 40	.027 37	.026 34	.025 32	.024 29	.023 27	.022 25	.021 22	0.97
0.98	0.020 20	.019 18	.018 16	.017 15	.016 13	.015 11	.014 10	.013 09	.012 07	.011 06	0.98
0.99	0.010 05	.009 04	.008 02	.007 02	.006 02	.005 01	.004 01	.003 00	.002 00	.001 00	0.99

[注] 表内对数值皆取负值

n	1	2	3	4	5	6	7	8	9	n
$\ln 10^n$	2.30259	4.60517	6.90776	9.21034	11.51293	13.81551	16.11810	18.42068	20.72327	$\ln 10^n$

x	0	1	2	3	4	5	6	7	8	9	x
1.0	0.000 00	0.009 95	0.019 80	0.029 56	0.039 22	0.048 79	0.058 27	0.067 66	0.076 96	0.086 18	1.0
1.1	0.095 31	.104 36	.113 33	.122 22	.131 03	.139 76	.148 42	.157 00	.165 51	.173 95	1.1
1.2	0.182 82	.190 62	.198 85	.207 01	.215 11	.223 14	.231 11	.239 02	.246 86	.254 64	1.2
1.3	0.262 36	.270 03	.277 63	.285 18	.292 67	.300 10	.307 48	.314 81	.322 08	.329 30	1.3
1.4	0.336 47	.343 59	.350 66	.357 67	.364 64	.371 56	.378 44	.385 26	.392 04	.398 78	1.4
1.5	0.405 47	.412 11	.418 71	.425 27	.431 78	.438 25	.444 69	.451 08	.457 42	.463 73	1.5
1.6	0.470 00	.476 23	.482 43	.488 58	.494 70	.500 78	.506 82	.512 82	.518 79	.524 73	1.6
1.7	0.530 63	.536 49	.542 32	.548 12	.553 89	.559 62	.565 31	.570 98	.576 61	.582 22	1.7
1.8	0.587 79	.593 33	.598 84	.604 32	.609 77	.615 19	.620 58	.625 94	.631 27	.636 58	1.8
1.9	0.641 85	.647 10	.652 33	.657 52	.662 69	.667 83	.672 94	.678 03	.683 10	.688 13	1.9
2.0	0.693 15	.698 13	.703 10	.708 04	.712 95	.717 84	.722 71	.727 55	.732 37	.737 16	2.0
2.1	0.741 94	.746 69	.751 42	.756 12	.760 81	.765 47	.770 11	.774 73	.779 32	.783 90	2.1
2.2	0.788 46	.792 99	.797 51	.802 00	.806 48	.810 93	.815 36	.819 78	.824 18	.828 55	2.2
2.3	0.832 91	.837 25	.841 57	.845 87	.850 15	.854 42	.858 66	.862 89	.867 10	.871 29	2.3
2.4	0.875 47	.879 63	.883 77	.887 89	.892 00	.896 09	.900 16	.904 22	.908 26	.912 28	2.4
2.5	0.916 29	.920 23	.924 26	.928 22	.932 16	.936 09	.940 01	.943 91	.947 79	.951 66	2.5
2.6	0.955 51	.959 35	.963 17	.966 98	.970 78	.974 56	.978 33	.982 08	.985 82	.989 54	2.6
2.7	0.993 25	.996 95	1.000 63	1.004 30	1.007 96	1.011 60	1.015 23	1.018 85	1.022 45	1.026 04	2.7
2.8	1.029 62	1.033 18	.036 74	.040 28	.043 80	.047 32	.050 82	.054 31	.057 79	.061 26	2.8
2.9	1.064 71	.068 15	.071 58	.075 00	.078 41	.081 81	.085 19	.088 56	.091 92	.095 27	2.9
3.0	1.088 61	.101 94	.105 26	.108 56	.111 86	.115 14	.118 41	.121 68	.124 93	.128 17	3.0
3.1	1.131 40	.134 62	.137 83	.141 03	.144 22	.147 40	.150 57	.153 73	.156 88	.160 02	3.1
3.2	1.163 15	.166 27	.169 38	.172 48	.175 57	.178 65	.181 73	.184 79	.187 84	.190 89	3.2
3.3	1.183 92	.196 95	.199 96	.202 97	.205 97	.208 96	.211 94	.214 91	.217 88	.220 83	3.3
3.4	1.223 78	.226 71	.229 64	.232 56	.235 47	.238 37	.241 27	.244 15	.247 03	.249 90	3.4
3.5	1.252 76	.255 62	.258 46	.261 30	.264 13	.266 95	.269 76	.272 57	.275 36	.278 15	3.5
3.6	1.280 93	.283 71	.286 47	.289 23	.291 98	.294 73	.297 46	.300 19	.302 91	.305 63	3.6
3.7	1.308 33	.311 03	.313 72	.316 41	.319 09	.321 76	.324 42	.327 08	.329 72	.332 37	3.7
3.8	1.335 00	.337 68	.340 25	.342 86	.345 47	.348 07	.350 67	.353 25	.355 84	.358 41	3.8
3.9	1.360 93	.363 54	.366 09	.368 64	.371 18	.373 72	.376 24	.378 77	.381 28	.383 79	3.9
4.0	1.386 29	.388 79	.391 28	.393 77	.396 24	.398 72	.401 18	.403 64	.406 10	.408 54	4.0
4.1	1.410 99	.413 42	.415 85	.418 28	.420 70	.423 11	.425 52	.427 92	.430 31	.432 70	4.1
4.2	1.435 03	.437 46	.439 84	.442 20	.444 56	.446 92	.449 27	.451 61	.453 95	.456 29	4.2
4.3	1.458 62	.460 94	.463 26	.465 57	.467 87	.470 18	.472 47	.474 76	.477 05	.479 33	4.3
4.4	1.481 60	.483 87	.486 14	.488 40	.490 65	.492 90	.495 15	.497 39	.499 62	.501 85	4.4
4.5	1.504 08	.506 30	.508 51	.510 72	.512 93	.515 13	.517 32	.519 51	.521 70	.523 88	4.5
4.6	1.526 06	.528 23	.530 39	.532 56	.534 71	.536 87	.539 02	.541 16	.543 30	.545 43	4.6
4.7	1.547 56	.549 69	.551 81	.553 93	.556 04	.558 14	.560 25	.562 35	.564 44	.566 53	4.7
4.8	1.568 62	.570 70	.572 77	.574 85	.576 91	.578 98	.581 04	.583 09	.585 15	.587 19	4.8
4.9	1.589 24	.591 27	.593 31	.595 34	.597 37	.599 39	.601 41	.603 42	.605 43	.607 44	4.9
5.0	1.609 44	.611 44	.613 43	.615 42	.617 41	.619 39	.621 37	.623 34	.625 31	.627 28	5.0
5.1	1.629 24	.631 20	.633 15	.635 11	.637 05	.639 00	.640 94	.642 87	.644 81	.646 73	5.1
5.2	1.648 66	.650 58	.652 50	.654 41	.656 32	.658 23	.660 13	.662 03	.663 93	.665 82	5.2
5.3	1.667 71	.669 59	.671 47	.673 35	.675 23	.677 10	.678 93	.680 83	.682 69	.684 55	5.3
5.4	1.686 40	.688 25	.690 10	.691 94	.693 78	.695 62	.697 45	.699 28	.701 11	.702 93	5.4

n	1	2	3	4	5	6	7	8	9	n
ln 10 ⁿ	2.30259	4.60517	6.90776	9.21034	11.51293	13.81551	16.11810	18.42063	20.72327	ln 10 ⁿ

x	0	1	2	3	4	5	6	7	8	9	x
5.5	1.704 75	1.706 56	1.708 38	1.710 19	1.711 99	1.713 80	1.715 60	1.717 40	1.719 19	1.720 98	5.5
5.6	1.722 77	.724 55	.726 33	.728 11	.729 88	.731 66	.733 42	.735 19	.736 95	.738 71	5.6
5.7	1.740 47	.742 22	.743 97	.745 72	.747 46	.749 20	.750 94	.752 67	.754 40	.756 13	5.7
5.8	1.757 36	.759 58	.761 30	.763 02	.764 73	.766 44	.768 15	.769 85	.771 56	.773 26	5.8
5.9	1.774 95	.776 65	.778 34	.780 02	.781 71	.783 39	.785 07	.786 75	.788 42	.790 09	5.9
6.0	1.791 76	.793 42	.795 09	.796 75	.798 40	.800 06	.801 71	.803 36	.805 00	.806 65	6.0
6.1	1.808 29	.809 93	.811 56	.813 19	.814 82	.816 45	.818 08	.819 70	.821 32	.822 94	6.1
6.2	1.824 55	.826 16	.827 77	.829 38	.830 98	.832 53	.834 18	.835 73	.837 37	.838 96	6.2
6.3	1.840 55	.842 14	.843 72	.845 30	.846 82	.848 45	.850 03	.851 60	.853 17	.854 73	6.3
6.4	1.856 30	.857 86	.859 42	.860 97	.862 53	.864 03	.865 63	.867 13	.868 72	.870 26	6.4
6.5	1.871 80	.873 34	.874 87	.876 41	.877 94	.879 47	.880 99	.882 51	.884 03	.885 55	6.5
6.6	1.887 07	.888 58	.890 10	.891 60	.893 11	.894 62	.896 12	.897 62	.899 12	.900 61	6.6
6.7	1.902 11	.903 60	.905 09	.906 58	.908 06	.909 54	.911 02	.912 50	.913 98	.915 45	6.7
6.8	1.916 92	.918 39	.919 86	.921 32	.922 79	.924 25	.925 71	.927 16	.928 62	.930 07	6.8
6.9	1.931 52	.932 97	.934 42	.935 86	.937 30	.938 74	.940 13	.941 62	.943 05	.944 48	6.9
7.0	1.945 91	.947 34	.948 76	.950 19	.951 61	.953 03	.954 45	.955 86	.957 27	.958 69	7.0
7.1	1.960 09	.961 50	.962 91	.964 31	.965 71	.967 11	.968 51	.969 91	.971 30	.972 69	7.1
7.2	1.974 08	.975 47	.976 85	.978 24	.979 62	.981 00	.982 33	.983 76	.985 13	.986 50	7.2
7.3	1.987 87	.989 24	.990 61	.991 98	.993 34	.994 70	.996 06	.997 42	.998 77	2.000 13	7.3
7.4	2.001 48	2.002 83	2.004 18	2.005 53	2.006 87	2.008 21	2.009 56	2.010 90	2.012 23	.013 57	7.4
7.5	2.014 90	.016 24	.017 57	.018 90	.020 22	.021 55	.022 87	.024 19	.025 51	.026 86	7.5
7.6	2.028 15	.029 46	.030 78	.032 09	.033 40	.034 71	.036 01	.037 32	.038 62	.039 92	7.6
7.7	2.041 22	.042 52	.043 81	.045 11	.046 40	.047 69	.048 93	.050 27	.051 56	.052 84	7.7
7.8	2.054 12	.055 40	.056 68	.057 96	.059 24	.060 51	.061 79	.063 06	.064 33	.065 60	7.8
7.9	2.066 86	.068 13	.069 39	.070 65	.071 91	.073 17	.074 43	.075 63	.076 94	.078 19	7.9
8.0	2.079 44	.080 69	.081 94	.083 18	.084 43	.085 67	.086 91	.088 15	.089 39	.090 63	8.0
8.1	2.091 86	.093 10	.094 33	.095 56	.096 79	.098 02	.099 24	.100 47	.101 69	.102 91	8.1
8.2	2.104 13	.105 35	.106 57	.107 79	.109 00	.110 21	.111 42	.112 63	.113 84	.115 05	8.2
8.3	2.116 26	.117 46	.118 68	.119 86	.121 06	.122 26	.123 46	.124 65	.125 85	.127 04	8.3
8.4	2.128 23	.129 42	.130 61	.131 80	.132 93	.134 17	.135 35	.136 53	.137 71	.138 89	8.4
8.5	2.140 07	.141 24	.142 42	.143 59	.144 76	.145 93	.147 10	.148 27	.149 43	.150 60	8.5
8.6	2.151 76	.152 92	.154 09	.155 24	.156 40	.157 56	.158 71	.159 87	.161 02	.162 17	8.6
8.7	2.163 32	.164 47	.165 62	.166 77	.167 91	.169 05	.170 20	.171 34	.172 43	.173 61	8.7
8.8	2.174 75	.175 89	.177 02	.178 16	.179 29	.180 42	.181 55	.182 67	.183 80	.184 93	8.8
8.9	2.186 05	.187 17	.188 30	.189 42	.190 54	.191 65	.192 77	.193 89	.195 00	.196 11	8.9
9.0	2.197 22	.198 34	.199 44	.200 55	.201 66	.202 76	.203 87	.204 97	.206 07	.207 17	9.0
9.1	2.208 27	.209 37	.210 47	.211 57	.212 66	.213 75	.214 85	.215 94	.217 03	.218 12	9.1
9.2	2.219 20	.220 29	.221 38	.222 46	.223 54	.224 62	.225 70	.226 78	.227 86	.228 94	9.2
9.3	2.230 01	.231 09	.232 16	.233 24	.234 31	.235 38	.236 45	.237 51	.238 58	.239 65	9.3
9.4	2.240 71	.241 77	.242 84	.243 90	.244 96	.246 01	.247 07	.248 13	.249 18	.250 24	9.4
9.5	2.251 29	.252 34	.253 39	.254 44	.255 49	.256 54	.257 59	.258 63	.259 68	.260 72	9.5
9.6	2.261 76	.262 80	.263 84	.264 88	.265 92	.266 96	.267 99	.269 03	.270 06	.271 09	9.6
9.7	2.272 13	.273 16	.274 19	.275 21	.276 24	.277 27	.278 29	.279 32	.280 34	.281 36	9.7
9.8	2.282 38	.283 40	.284 42	.285 44	.286 46	.287 47	.288 49	.289 50	.290 51	.291 52	9.8
9.9	2.292 53	.293 54	.294 55	.295 56	.296 57	.297 57	.298 58	.299 58	.300 58	.301 58	9.9

p	1	2	3	4	5	6	7	8	9	p
$\ln 10^n$	2.30259	4.60517	6.90776	9.21034	11.51293	13.81551	16.11810	18.42068	20.72327	$\ln 10^n$