

付録 B

数表

B.1 正規分布のパーセント点

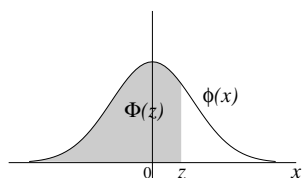
パーセント	90	95	97.5	99	99.5
α	0.10	0.05	0.025	0.01	0.005
z_α	1.282	1.645	1.960	2.326	2.576

B.2 正規分布表

正規分布表には積分範囲が異なるものがあるので注意

すること。

$$\Phi(z) = \int_{-\infty}^z \frac{1}{\sqrt{2\pi}} e^{-x^2/2} dx$$



	0	1	2	3	4	5	6	7	8	9
0.0	.50000	.50398	.50797	.51196	.51595	.51993	.52392	.52790	.53188	.53585
0.1	.53982	.54379	.54775	.55171	.55567	.55961	.56355	.56749	.57142	.57534
0.2	.57925	.58316	.58706	.59095	.59483	.59870	.60256	.60641	.61026	.61409
0.3	.61791	.62171	.62551	.62930	.63307	.63683	.64057	.64430	.64802	.65173
0.4	.65542	.65909	.66275	.66640	.67003	.67364	.67724	.68082	.68438	.68793
0.5	.69146	.69497	.69846	.70194	.70540	.70884	.71226	.71566	.71904	.72240
0.6	.72574	.72906	.73237	.73565	.73891	.74215	.74537	.74857	.75174	.75490
0.7	.75803	.76114	.76423	.76730	.77035	.77337	.77637	.77935	.78230	.78523
0.8	.78814	.79102	.79389	.79673	.79954	.80233	.80510	.80784	.81057	.81326
0.9	.81593	.81858	.82121	.82381	.82639	.82894	.83147	.83397	.83645	.83891
1.0	.84134	.84375	.84613	.84849	.85083	.85314	.85542	.85769	.85992	.86214
1.1	.86433	.86650	.86864	.87076	.87285	.87492	.87697	.87899	.88099	.88297
1.2	.88493	.88686	.88876	.89065	.89251	.89435	.89616	.89795	.89972	.90147
1.3	.90319	.90490	.90658	.90824	.90987	.91149	.91308	.91465	.91620	.91773
1.4	.91924	.92073	.92219	.92364	.92506	.92647	.92785	.92921	.93056	.93188
1.5	.93319	.93447	.93574	.93699	.93821	.93942	.94062	.94179	.94294	.94408
1.6	.94520	.94630	.94738	.94844	.94949	.95052	.95154	.95254	.95352	.95448
1.7	.95543	.95636	.95728	.95818	.95907	.95994	.96079	.96163	.96246	.96327
1.8	.96406	.96485	.96562	.96637	.96711	.96784	.96855	.96925	.96994	.97062
1.9	.97128	.97193	.97257	.97319	.97381	.97441	.97500	.97558	.97614	.97670
2.0	.97724	.97778	.97830	.97882	.97932	.97981	.98030	.98077	.98123	.98169
2.1	.98213	.98257	.98299	.98341	.98382	.98422	.98461	.98499	.98537	.98573
2.2	.98609	.98644	.98679	.98712	.98745	.98777	.98808	.98839	.98869	.98898
2.3	.98927	.98955	.98982	.99009	.99035	.99061	.99086	.99110	.99134	.99157
2.4	.99180	.99202	.99223	.99245	.99265	.99285	.99305	.99324	.99343	.99361
2.5	.99379	.99396	.99413	.99429	.99445	.99461	.99476	.99491	.99505	.99520
2.6	.99533	.99547	.99560	.99573	.99585	.99597	.99609	.99620	.99631	.99642
2.7	.99653	.99663	.99673	.99683	.99692	.99702	.99710	.99719	.99728	.99736
2.8	.99744	.99752	.99759	.99767	.99774	.99781	.99788	.99794	.99801	.99807
2.9	.99813	.99819	.99824	.99830	.99835	.99841	.99846	.99851	.99855	.99860

(以下次ページ)

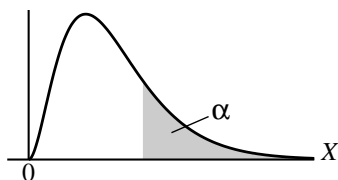
(前ページからの続き)

	0	1	2	3	4	5	6	7	8	9
3.0	.99865	.99869	.99873	.99877	.99881	.99885	.99889	.99892	.99896	.99899
3.1	.93032	.93064	.93095	.93125	.93155	.93183	.93211	.93237	.93263	.93288
3.2	.93312	.93336	.93359	.93381	.93402	.93422	.93442	.93462	.93480	.93499
3.3	.93516	.93533	.93549	.93565	.93581	.93595	.93610	.93624	.93637	.93650
3.4	.93663	.93675	.93686	.93698	.93709	.93719	.93729	.93739	.93749	.93758
3.5	.93767	.93775	.93784	.93792	.93799	.93807	.93814	.93821	.93828	.93834
3.6	.93840	.93846	.93852	.93858	.93863	.93868	.93873	.93878	.93883	.93887
3.7	.93892	.93896	.94003	.94042	.94079	.94115	.94150	.94183	.94215	.94246
3.8	.94276	.94305	.94332	.94359	.94384	.94409	.94433	.94455	.94477	.94498
3.9	.94519	.94538	.94557	.94575	.94592	.94609	.94625	.94640	.94655	.94669
4.0	.94683	.94696	.94709	.94721	.94732	.94743	.94754	.94764	.94774	.94784
4.1	.94793	.94802	.94810	.94818	.94826	.94833	.94840	.94847	.94854	.94860
4.2	.94866	.94872	.94877	.94883	.94888	.94893	.94897	.95022	.95065	.95106
4.3	.95146	.95183	.95219	.95254	.95287	.95319	.95349	.95378	.95406	.95433
4.4	.95458	.95483	.95506	.95528	.95550	.95570	.95590	.95608	.95626	.95643
4.5	.95660	.95675	.95690	.95705	.95718	.95731	.95744	.95756	.95767	.95778
4.6	.95788	.95798	.95808	.95817	.95825	.95834	.95841	.95849	.95856	.95863
4.7	.95869	.95876	.95882	.95887	.95893	.95898	.95903	.95907	.95912	.95916
4.8	.95920	.95924	.95928	.95931	.95935	.95938	.95941	.95944	.95946	.95949
4.9	.95952	.95954	.95956	.95958	.95960	.95962	.95964	.95966	.95968	.95969
5.0	.95971	.95972	.95974	.95975	.95976	.95977	.95979	.95980	.95981	.95982

.93032 とあるのは 0.999032 の意味。下付の添字で連続する 9 の数を示した。他同様。

B.3 χ^2 分布表

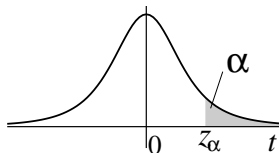
【表の見方 自由度 ν が 5 のときに α の面積が 0.05 になるような X の値 (X_α) は, 表から 11.071 となる. $3.93\text{e-}5$ は 3.93×10^{-5} を表す.



α	0.995	0.975	0.95	0.9	0.5	0.05	0.025	0.01	0.005
$\nu = 1$	3.93e-5	9.82e-4	3.93e-3	0.0158	0.455	3.841	5.024	6.635	7.879
$\nu = 2$	0.010	0.051	0.103	0.211	1.386	5.991	7.378	9.210	10.597
$\nu = 3$	0.072	0.216	0.352	0.584	2.366	7.815	9.348	11.345	12.838
$\nu = 4$	0.207	0.484	0.711	1.064	3.357	9.488	11.143	13.277	14.861
$\nu = 5$	0.412	0.831	1.145	1.610	4.351	11.071	12.833	15.086	16.750
$\nu = 6$	0.676	1.237	1.635	2.204	5.348	12.592	14.449	16.812	18.548
$\nu = 7$	0.989	1.690	2.167	2.833	6.346	14.067	16.013	18.475	20.278
$\nu = 8$	1.344	2.180	2.733	3.490	7.344	15.507	17.535	20.090	21.955
$\nu = 9$	1.735	2.700	3.325	4.168	8.343	16.919	19.023	21.666	23.589
$\nu = 10$	2.156	3.247	3.940	4.865	9.342	18.307	20.483	23.209	25.188
$\nu = 11$	2.603	3.816	4.575	5.578	10.341	19.675	21.920	24.725	26.757
$\nu = 12$	3.074	4.404	5.226	6.304	11.340	21.026	23.337	26.217	28.300
$\nu = 13$	3.565	5.009	5.892	7.041	12.340	22.362	24.736	27.688	29.819
$\nu = 14$	4.075	5.629	6.571	7.790	13.339	23.685	26.119	29.141	31.319
$\nu = 15$	4.601	6.262	7.261	8.547	14.339	24.996	27.488	30.578	32.801
$\nu = 16$	5.142	6.908	7.962	9.312	15.338	26.296	28.845	32.000	34.267
$\nu = 17$	5.697	7.564	8.672	10.085	16.338	27.587	30.191	33.409	35.718
$\nu = 18$	6.265	8.231	9.390	10.865	17.338	28.869	31.526	34.805	37.156
$\nu = 19$	6.844	8.906	10.117	11.651	18.338	30.144	32.852	36.191	38.582
$\nu = 20$	7.434	9.591	10.851	12.443	19.337	31.410	34.170	37.566	39.997
$\nu = 21$	8.034	10.283	11.591	13.239	20.337	32.670	35.479	38.932	41.401
$\nu = 22$	8.643	10.982	12.338	14.041	21.337	33.924	36.781	40.289	42.796
$\nu = 23$	9.260	11.688	13.090	14.848	22.337	35.172	38.076	41.638	44.181
$\nu = 24$	9.886	12.401	13.848	15.659	23.337	36.415	39.364	42.980	45.558
$\nu = 25$	10.520	13.120	14.611	16.473	24.336	37.652	40.646	44.314	46.928
$\nu = 26$	11.160	13.844	15.379	17.292	25.336	38.885	41.923	45.642	48.290
$\nu = 27$	11.807	14.573	16.151	18.114	26.336	40.113	43.194	46.963	49.645
$\nu = 28$	12.461	15.308	16.928	18.939	27.336	41.337	44.461	48.278	50.993
$\nu = 29$	13.121	16.047	17.708	19.768	28.336	42.557	45.722	49.588	52.336
$\nu = 30$	13.787	16.791	18.493	20.599	29.336	43.773	46.979	50.892	53.672
$\nu = 40$	20.706	24.433	26.509	29.050	39.335	55.758	59.342	63.691	66.766
$\nu = 50$	27.991	32.357	34.764	37.689	49.335	67.505	71.420	76.154	79.490
$\nu = 60$	35.534	40.482	43.188	46.459	59.335	79.082	83.298	88.379	91.952
$\nu = 80$	51.172	57.153	60.391	64.278	79.334	101.88	106.63	112.33	116.32
$\nu = 90$	59.20	65.65	69.13	73.29	89.33	113.15	118.14	124.12	128.30
$\nu = 100$	67.33	74.22	77.93	82.36	99.33	124.34	129.56	135.81	140.17

B.4 Student の t-分布表

【表の見方】 自由度 ν が 5 のときに α の面積が 0.05 になるような t の値 (z_α) は 2.015 である.



α	0.1	0.05	0.025	0.01	0.005	0.0025
$\nu = 1$	3.078	6.314	12.706	31.821	63.657	127.321
$\nu = 2$	1.886	2.920	4.303	6.965	9.925	14.089
$\nu = 3$	1.638	2.353	3.182	4.541	5.841	7.453
$\nu = 4$	1.533	2.132	2.776	3.747	4.604	5.598
$\nu = 5$	1.476	2.015	2.571	3.365	4.032	4.773
$\nu = 6$	1.440	1.943	2.447	3.143	3.707	4.317
$\nu = 7$	1.415	1.895	2.365	2.998	3.499	4.029
$\nu = 8$	1.397	1.860	2.306	2.896	3.355	3.833
$\nu = 9$	1.383	1.833	2.262	2.821	3.250	3.690
$\nu = 10$	1.372	1.812	2.228	2.764	3.169	3.581
$\nu = 11$	1.363	1.796	2.201	2.718	3.106	3.497
$\nu = 12$	1.356	1.782	2.179	2.681	3.055	3.428
$\nu = 13$	1.350	1.771	2.160	2.650	3.012	3.372
$\nu = 14$	1.345	1.761	2.145	2.624	2.977	3.326
$\nu = 15$	1.341	1.753	2.131	2.602	2.947	3.286
$\nu = 16$	1.337	1.746	2.120	2.583	2.921	3.252
$\nu = 17$	1.333	1.740	2.110	2.567	2.898	3.222
$\nu = 18$	1.330	1.734	2.101	2.552	2.878	3.197
$\nu = 19$	1.328	1.729	2.093	2.539	2.861	3.174
$\nu = 20$	1.325	1.725	2.086	2.528	2.845	3.153
$\nu = 21$	1.323	1.721	2.080	2.518	2.831	3.135
$\nu = 22$	1.321	1.717	2.074	2.508	2.819	3.119
$\nu = 23$	1.319	1.714	2.069	2.500	2.807	3.104
$\nu = 24$	1.318	1.711	2.064	2.492	2.797	3.091
$\nu = 25$	1.316	1.708	2.060	2.485	2.787	3.078
$\nu = 30$	1.310	1.697	2.042	2.457	2.750	3.030
$\nu = 35$	1.306	1.690	2.030	2.438	2.724	2.996
$\nu = 40$	1.303	1.684	2.021	2.423	2.704	2.971
$\nu = 45$	1.301	1.679	2.014	2.412	2.690	2.952
$\nu = 50$	1.299	1.676	2.009	2.403	2.678	2.937
$\nu = 60$	1.296	1.671	2.000	2.390	2.660	2.915
$\nu = 70$	1.294	1.667	1.994	2.381	2.648	2.899
$\nu = 80$	1.292	1.664	1.990	2.374	2.639	2.887
$\nu = 90$	1.291	1.662	1.987	2.368	2.632	2.878
$\nu = 100$	1.290	1.660	1.984	2.364	2.626	2.871
$\nu = 120$	1.289	1.658	1.980	2.358	2.617	2.860

