# Standard Normal table

		0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	
$t = (2\pi e^{z^2})^{-0.5}$	$\leq -3.50$ $-3.4$ $-3.3$ $-3.2$ $-3.1$ $-3.0$	0.0001 0.0003 0.0005 0.0007 0.0010 0.0014	$\begin{array}{c} 0.0003 \\ 0.0005 \\ 0.0007 \\ 0.0010 \\ 0.0013 \end{array}$	0.0003 0.0005 0.0006 0.0009 0.0013	$\begin{array}{c} 0.0003 \\ 0.0004 \\ 0.0006 \\ 0.0009 \\ 0.0012 \end{array}$	0.0006	0.0003 0.0004 0.0006 0.0008 0.0011	$\begin{array}{c} 0.0003 \\ 0.0004 \\ 0.0006 \\ 0.0008 \\ 0.0011 \end{array}$	$\begin{array}{c} 0.0004 \\ 0.0005 \\ 0.0008 \end{array}$	$\begin{array}{c} 0.0003 \\ 0.0004 \\ 0.0005 \\ 0.0007 \\ 0.0010 \end{array}$	0.0002 0.0004 0.0005 0.0007 0.0010	3.3 3.2 3.1
P(z  or less)	$\begin{array}{c} -2.9 \\ -2.8 \\ -2.7 \\ -2.6 \\ -2.5 \\ -2.4 \\ -2.3 \\ -2.2 \\ -2.1 \\ -2.0 \end{array}$	$\begin{array}{c} 0.0019 \\ 0.0026 \\ 0.0035 \\ 0.0047 \\ 0.0062 \\ 0.0107 \\ 0.0139 \\ 0.0179 \\ 0.0228 \end{array}$	$\begin{array}{c} 0.0018 \\ 0.0025 \\ 0.0034 \\ 0.0045 \\ 0.0060 \\ 0.0080 \\ 0.0105 \\ 0.0136 \\ 0.0174 \\ 0.0222 \end{array}$	$\begin{array}{c} 0.0018 \\ 0.0024 \\ 0.0033 \\ 0.0044 \\ 0.0059 \\ 0.0078 \\ 0.0102 \\ 0.0132 \\ 0.0170 \\ 0.0217 \end{array}$	$\begin{array}{c} 0.0017 \\ 0.0023 \\ 0.0032 \\ 0.0043 \\ 0.0057 \\ 0.0076 \\ 0.0099 \\ 0.0129 \\ 0.0166 \\ 0.0212 \end{array}$	$\begin{array}{c} 0.0023 \\ 0.0031 \\ 0.0042 \\ 0.0056 \\ 0.0074 \\ 0.0097 \\ 0.0126 \end{array}$	$\begin{array}{c} 0.0016 \\ 0.0022 \\ 0.0030 \\ 0.0040 \\ 0.0054 \\ 0.0072 \\ 0.0094 \\ 0.0122 \\ 0.0158 \\ 0.0202 \end{array}$	$\begin{array}{c} 0.0015 \\ 0.0021 \\ 0.0029 \\ 0.0039 \\ 0.0053 \\ 0.0070 \\ 0.0092 \\ 0.0119 \\ 0.0154 \\ 0.0197 \end{array}$	0.0021 0.0028 0.0038 0.0051 0.0068 0.0089 0.0116 0.0150	$0.0087 \\ 0.0113 \\ 0.0146$	$\begin{array}{c} 0.0014 & - \\ 0.0019 & - \\ 0.0026 & - \\ 0.0036 & - \\ 0.0048 & - \\ 0.0064 & - \\ 0.0084 & - \\ 0.0110 & - \\ 0.0143 & - \\ 0.0183 & - \\ \end{array}$	2.8 2.7 2.6 2.5 2.4 2.3 2.2 2.1
	$\begin{array}{c} -1.9 \\ -1.8 \\ -1.7 \\ -1.6 \\ -1.5 \\ -1.4 \\ -1.3 \\ -1.2 \\ -1.1 \\ -1.0 \end{array}$	$\begin{array}{c} 0.0287 \\ 0.0359 \\ 0.0446 \\ 0.0548 \\ 0.0668 \\ 0.0808 \\ 0.0968 \\ 0.1151 \\ 0.1357 \\ 0.1587 \end{array}$	$\begin{array}{c} 0.0281 \\ 0.0352 \\ 0.0436 \\ 0.0537 \\ 0.0655 \\ 0.0793 \\ 0.0951 \\ 0.1131 \\ 0.1335 \\ 0.1562 \end{array}$	0.1112	$\begin{array}{c} 0.0268 \\ 0.0336 \\ 0.0418 \\ 0.0515 \\ 0.0630 \\ 0.0764 \\ 0.0918 \\ 0.1093 \\ 0.1292 \\ 0.1515 \end{array}$	$\begin{array}{c} 0.0262 \\ 0.0329 \\ 0.0409 \\ 0.0505 \\ 0.0618 \\ 0.0749 \\ 0.0901 \\ 0.1075 \\ 0.1271 \\ 0.1492 \end{array}$	$\begin{array}{c} 0.0256 \\ 0.0322 \\ 0.0401 \\ 0.0495 \\ 0.0606 \\ 0.0735 \\ 0.0885 \\ 0.1056 \\ 0.1251 \\ 0.1469 \end{array}$	$\begin{array}{c} 0.0250 \\ 0.0315 \\ 0.0392 \\ 0.0485 \\ 0.0594 \\ 0.0721 \\ 0.0869 \\ 0.1038 \\ 0.1230 \\ 0.1446 \end{array}$	$\begin{array}{c} 0.0244 \\ 0.0308 \\ 0.0384 \\ 0.0475 \\ 0.0582 \\ 0.0708 \\ 0.0853 \\ 0.1020 \\ 0.1210 \\ 0.1423 \end{array}$	$\begin{array}{c} 0.0301 \\ 0.0375 \\ 0.0465 \\ 0.0571 \\ 0.0694 \\ 0.0838 \\ 0.1003 \\ 0.1190 \end{array}$	$\begin{array}{cccc} 0.0233 & - & \\ 0.0294 & - & \\ 0.0367 & - & \\ 0.0455 & - & \\ 0.0559 & - & \\ 0.0681 & - & \\ 0.0823 & - & \\ 0.0985 & - & \\ 0.1170 & - & \\ 0.1379 & - & \\ \end{array}$	1.8 1.7 1.6 1.5 1.4 1.3 1.2
percentile rank or less) = area left of $z$	$\begin{array}{c} -0.9 \\ -0.8 \\ -0.7 \\ -0.6 \\ -0.5 \\ -0.4 \\ -0.3 \\ -0.2 \\ -0.1 \\ -0.0 \end{array}$	$\begin{array}{c} 0.1841 \\ 0.2119 \\ 0.2420 \\ 0.2743 \\ 0.3086 \\ 0.3446 \\ 0.3821 \\ 0.4207 \\ 0.4602 \\ 0.5000 \end{array}$	$\begin{array}{c} 0.1814 \\ 0.2090 \\ 0.2389 \\ 0.2710 \\ 0.3050 \\ 0.3409 \\ 0.3783 \\ 0.4168 \\ 0.4562 \\ 0.4960 \end{array}$	$\begin{array}{c} 0.1788 \\ 0.2061 \\ 0.2358 \\ 0.2676 \\ 0.3015 \\ 0.3373 \\ 0.3745 \\ 0.4129 \\ 0.4522 \\ 0.4920 \end{array}$	$\begin{array}{c} 0.1762 \\ 0.2033 \\ 0.2327 \\ 0.2644 \\ 0.2981 \\ 0.3336 \\ 0.3707 \\ 0.4090 \\ 0.4483 \\ 0.4880 \end{array}$	$\begin{array}{c} 0.1736 \\ 0.2005 \\ 0.2297 \\ 0.2611 \\ 0.2946 \\ 0.3300 \\ 0.3669 \\ 0.4052 \\ 0.4443 \\ 0.4840 \end{array}$	$\begin{array}{c} 0.1711 \\ 0.1977 \\ 0.2266 \\ 0.2579 \\ 0.2912 \\ 0.3264 \\ 0.3632 \\ 0.4013 \\ 0.4404 \\ 0.4801 \end{array}$	$\begin{array}{c} 0.1685 \\ 0.1949 \\ 0.2236 \\ 0.2546 \\ 0.2878 \\ 0.3228 \\ 0.3594 \\ 0.4364 \\ 0.4761 \end{array}$	$\begin{array}{c} 0.1660 \\ 0.1922 \\ 0.2207 \\ 0.2515 \\ 0.2844 \\ 0.3192 \\ 0.3557 \\ 0.3936 \\ 0.4325 \\ 0.4721 \end{array}$	$\begin{array}{c} 0.1635 \\ 0.1894 \\ 0.2177 \\ 0.2483 \\ 0.2810 \\ 0.3156 \\ 0.3520 \\ 0.3897 \\ 0.4286 \\ 0.4681 \end{array}$	$\begin{array}{c} 0.1611 & -0 \\ 0.1867 & -0 \\ 0.2148 & -0 \\ 0.2451 & -0 \\ 0.2776 & -0 \\ 0.3121 & -0 \\ 0.3483 & -0 \\ 0.3859 & -0 \\ 0.4247 & -0 \\ 0.4641 & -0 \\ \end{array}$	0.8 0.7 0.6 0.5 0.4 0.3 0.2
P(z)	$\begin{array}{c} 0.0 \\ 0.1 \\ 0.2 \\ 0.3 \\ 0.4 \\ 0.5 \\ 0.6 \\ 0.7 \\ 0.8 \\ 0.9 \end{array}$	$\begin{array}{c} 0.5000 \\ 0.5398 \\ 0.5793 \\ 0.6179 \\ 0.6554 \\ 0.6915 \\ 0.7257 \\ 0.7580 \\ 0.7881 \\ 0.8160 \end{array}$	$\begin{array}{c} 0.5040 \\ 0.5438 \\ 0.5832 \\ 0.6217 \\ 0.6591 \\ 0.6950 \\ 0.7291 \\ 0.7611 \\ 0.7910 \\ 0.8186 \end{array}$	$\begin{array}{c} 0.5080 \\ 0.5478 \\ 0.5871 \\ 0.6255 \\ 0.6627 \\ 0.6985 \\ 0.7324 \\ 0.7642 \\ 0.7939 \\ 0.8212 \end{array}$	$\begin{array}{c} 0.5120 \\ 0.5517 \\ 0.5910 \\ 0.6293 \\ 0.6664 \\ 0.7019 \\ 0.7356 \\ 0.7673 \\ 0.7967 \\ 0.8238 \end{array}$	$\begin{array}{c} 0.6700 \\ 0.7054 \\ 0.7389 \\ 0.7703 \end{array}$	0.5199 0.5596 0.5987 0.6368 0.6736 0.7088 0.7421 0.7734 0.8023 0.8290	$\begin{array}{c} 0.5239 \\ 0.5636 \\ 0.6026 \\ 0.6406 \\ 0.6772 \\ 0.7123 \\ 0.7454 \\ 0.7764 \\ 0.8051 \\ 0.8315 \end{array}$	$\begin{array}{c} 0.5279 \\ 0.5675 \\ 0.6064 \\ 0.6443 \\ 0.6808 \\ 0.7157 \\ 0.7486 \\ 0.7793 \\ 0.8079 \\ 0.8340 \end{array}$	$\begin{array}{c} 0.5319 \\ 0.5714 \\ 0.6103 \\ 0.6480 \\ 0.6844 \\ 0.7190 \\ 0.7517 \\ 0.7823 \\ 0.8106 \\ 0.8365 \end{array}$	0.5754 0.6141 0.6517 0.6879 0.7224 0.7549 0.7852 0.8133	0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8
use table to convert	1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8	$\begin{array}{c} 0.8414 \\ 0.8643 \\ 0.8849 \\ 0.9032 \\ 0.9193 \\ 0.9332 \\ 0.9452 \\ 0.9554 \\ 0.9641 \\ 0.9713 \end{array}$	$\begin{array}{c} 0.8438 \\ 0.8665 \\ 0.8869 \\ 0.9049 \\ 0.9207 \\ 0.9345 \\ 0.9463 \\ 0.9564 \\ 0.9648 \\ 0.9719 \end{array}$	$\begin{array}{c} 0.8462 \\ 0.8687 \\ 0.8888 \\ 0.9066 \\ 0.9222 \\ 0.9358 \\ 0.9474 \\ 0.9573 \\ 0.9656 \\ 0.9726 \end{array}$	$\begin{array}{c} 0.8485 \\ 0.8708 \\ 0.8907 \\ 0.9083 \\ 0.9237 \\ 0.9370 \\ 0.9485 \\ 0.9582 \\ 0.9664 \\ 0.9732 \end{array}$	$\begin{array}{c} 0.8509 \\ 0.8729 \\ 0.8925 \\ 0.9099 \\ 0.9251 \\ 0.9382 \\ 0.9495 \\ 0.9591 \\ 0.9671 \\ 0.9738 \end{array}$	$\begin{array}{c} 0.8532 \\ 0.8749 \\ 0.8944 \\ 0.9115 \\ 0.9265 \\ 0.9394 \\ 0.9505 \\ 0.9599 \\ 0.9678 \\ 0.9744 \end{array}$	$\begin{array}{c} 0.8554 \\ 0.8770 \\ 0.8962 \\ 0.9131 \\ 0.9279 \\ 0.9406 \\ 0.9515 \\ 0.9608 \\ 0.9686 \\ 0.9750 \end{array}$		$0.8810 \\ 0.8997$	0.8830 0.9015 0.9177 0.9319 0.9441 0.9545 0.9633 0.9706	1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8
standard units $\epsilon z = \frac{x - \mu}{\sigma}$	2.0 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9	$\begin{array}{c} 0.9772 \\ 0.9821 \\ 0.9861 \\ 0.9893 \\ 0.9918 \\ 0.9938 \\ 0.9953 \\ 0.9965 \\ 0.9974 \\ 0.9981 \end{array}$	$\begin{array}{c} 0.9778 \\ 0.9826 \\ 0.9864 \\ 0.9896 \\ 0.9920 \\ 0.9940 \\ 0.9955 \\ 0.9966 \\ 0.9975 \\ 0.9982 \end{array}$	0.9783 0.9830 0.9868 0.9898 0.9922 0.9941 0.9956 0.9967 0.9976 0.9983	0.9788 0.9834 0.9871 0.9901 0.9925 0.9943 0.9957 0.9968 0.9977 0.9983	$\begin{array}{c} 0.9793 \\ 0.9838 \\ 0.9874 \\ 0.9903 \\ 0.9927 \\ 0.9945 \\ 0.9959 \\ 0.9969 \\ 0.9977 \\ 0.9984 \end{array}$	$\begin{array}{c} 0.9798 \\ 0.9842 \\ 0.9878 \\ 0.9906 \\ 0.9928 \\ 0.9946 \\ 0.9960 \\ 0.9970 \\ 0.9978 \\ 0.9984 \end{array}$	$\begin{array}{c} 0.9803 \\ 0.9846 \\ 0.9881 \\ 0.9908 \\ 0.9930 \\ 0.9948 \\ 0.9961 \\ 0.9971 \\ 0.9985 \end{array}$		0.9812 0.9854 0.9887 0.9913 0.9934 0.9951 0.9963 0.9973 0.9980 0.9986	0.9857 0.9890 0.9916 0.9936 0.9952 0.9964 0.9974 0.9981	2.0 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9
standaı $z = \frac{z}{z}$	$\begin{array}{c} 3.0\\ 3.1\\ 3.2\\ 3.3\\ 3.4\\ \geq 3.50 \end{array}$	0.9986 0.9990 0.9993 0.9995 0.9997 0.0001	0.9987 0.9991 0.9993 0.9995 0.9997	0.9987 0.9991 0.9994 0.9995 0.9997	$\begin{array}{c} 0.9988 \\ 0.9991 \\ 0.9994 \\ 0.9996 \\ 0.9997 \end{array}$		0.9989 0.9992 0.9994 0.9996 0.9997	0.9989 0.9992 0.9994 0.9996 0.9997	0.9989 0.9992 0.9995 0.9996 0.9997	0.9990 0.9993 0.9995 0.9996 0.9997	0.9993 0.9995 0.9997	3.0 3.1 3.2 3.3 3.4
		0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	

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symmetry: P(-z or less) = 1 - P(z or less)

# $F_Z$ table

	0.0	0.1	0.2	0.3	0.4	0.5	9.0	0.7	8.0	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	
60.	.5359	.5753	.6141	.6517	6289.	.7224	.7549	.7852	.8133	.8389	.8622	.8830	.9015	.9177	.9319	.9441	.9545	.9633	9026.	2926.	.9817	7286.	0686.	.9916	9636	.9952	.9964	.9974	.9981	9866.	.9990	60.
80.	.5319	.5714	.6103	.6480	.6844	.7190	.7517	.7823	.8106	.8365	.8599	.8810	7668.	.9162	.9306	.9429	.9535	.9625	6696.	.9761	.9812	.9854	.9887	.9913	.9934	.9951	.9963	.9973	.9980	9866.	.9990	80.
.07	.5279	.5675	.6064	.6443	.6808	.7157	.7486	.7793	8078	.8340	.8577	.8790	.8980	.9147	.9292	.9418	.9525	.9616	.9693	.9756	.9808	.9850	.9884	.9911	.9932	.9949	.9962	.9972	9979	.9985	.9989	.07
90.	.5239	.5636	.6026	.6406	.6772	.7122	.7454	.7764	.8051	.8315	.8554	.8770	.8962	.9131	.9279	.9406	.9515	8096.	9896	.9750	.9803	.9846	.9881	8066	.9930	.9948	.9961	.9971	9979	.9985	6866.	90:
.05	.5199	.5596	.5987	8989.	.6736	.7088	.7421	.7734	.8023	.8289	.8531	.8749	.8944	.9115	.9265	.9394	.9505	.9599	8296.	.9744	8626.	.9842	.9878	9066.	.9928	.9946	0966.	09970	8266.	.9984	6866.	.05
.04	.5160	.5557	.5948	.6331	0029.	.7054	.7389	.7703	.7995	.8264	.8508	.8729	.8925	6606.	.9251	.9382	.9495	.9591	1296.	.9738	.9793	.9838	.9874	.9903	.9926	.9944	.9958	6966.	7266.	.9984	8866.	.04
.03	.5120	.5517	.5910	.6293	.6664	.7019	.7356	.7673	7967.	.8238	.8485	8708	8907	.9082	.9236	.9370	.9485	.9582	.9664	.9732	.9788	.9834	.9871	.9901	.9924	.9943	.9957	8966.	7266.	.9983	8866.	.03
.02	.5080	.5478	.5871	.6255	.6627	6985	.7324	.7642	.7939	.8212	.8461	7898.	.8888	9906:	.9222	.9357	.9474	.9573	9656	.9726	.9783	.9830	8986.	8686.	.9922	.9941	9956	2966.	9266.	.9982	7866.	.02
.01	.5040	.5438	.5832	.6217	.6591	.6950	.7290	.7611	.7910	.8186	.8438	.8665	8869	.9049	.9207	.9345	.9463	.9564	.9648	.9719	.9778	.9826	.9864	.9895	.9920	.9940	.9955	9966	.9975	.9982	7866.	.01
00.	.5000	.5398	.5793	.6179	.6554	.6915	.7257	.7580	.7881	.8159	.8414	.8643	.8849	.9032	.9193	.9332	.9452	.9554	.9641	.9713	.9772	.9821	.9861	.9893	.9918	.9938	.9953	9965	.9974	.9981	9866.	00.
	0.0	0.1	0.2	0.3	0.4	0.5	9.0	0.7	0.8	0.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	

# $F_Z$ table

# $F_Z$ table

	0.0	0.1	0.2	0.3	0.4	0.5	9.0	0.7	8.0	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	
60.	.5359	.5753	.6141	.6517	6289.	.7224	.7549	.7852	.8133	.8389	.8622	.8830	.9015	.9177	.9319	.9441	.9545	.9633	9026.	2926.	.9817	7286.	0686.	.9916	9936	.9952	.9964	.9974	.9981	9866.	.9990	60.
80.	.5319	.5714	.6103	.6480	.6844	.7190	.7517	.7823	.8106	.8365	.8599	.8810	7668.	.9162	.9306	.9429	.9535	.9625	6696.	.9761	.9812	.9854	.9887	.9913	.9934	.9951	9963	.9973	.9980	9866.	.9990	80.
.07	.5279	.5675	.6064	.6443	.6808	.7157	.7486	.7793	8078	.8340	.8577	.8790	.8980	.9147	.9292	.9418	.9525	.9616	.9693	.9756	.9808	.9850	.9884	.9911	.9932	.9949	.9962	.9972	9979	.9985	.9989	.07
90.	.5239	.5636	.6026	.6406	.6772	.7122	.7454	.7764	.8051	.8315	.8554	.8770	.8962	.9131	.9279	.9406	.9515	8096.	9896	.9750	.9803	.9846	.9881	8066	.9930	.9948	.9961	.9971	9979	.9985	6866.	90:
.05	.5199	.5596	.5987	8989.	.6736	.7088	.7421	.7734	.8023	.8289	.8531	.8749	.8944	.9115	.9265	.9394	.9505	.9599	8296.	.9744	8626.	.9842	.9878	9066.	.9928	.9946	0966.	09970	8266.	.9984	6866.	.05
.04	.5160	.5557	.5948	.6331	0029.	.7054	.7389	.7703	.7995	.8264	.8508	.8729	.8925	6606.	.9251	.9382	.9495	.9591	1296.	.9738	.9793	.9838	.9874	.9903	.9926	.9944	.9958	6966.	7266.	.9984	8866.	.04
.03	.5120	.5517	.5910	.6293	.6664	.7019	.7356	.7673	7967.	.8238	.8485	8708	8907	.9082	.9236	.9370	.9485	.9582	.9664	.9732	.9788	.9834	.9871	.9901	.9924	.9943	.9957	8966.	7266.	.9983	8866.	.03
.02	.5080	.5478	.5871	.6255	.6627	6985	.7324	.7642	.7939	.8212	.8461	7898.	.8888	9906:	.9222	.9357	.9474	.9573	9656	.9726	.9783	.9830	8986.	8686.	.9922	.9941	9956	2966.	9266.	.9982	7866.	.02
.01	.5040	.5438	.5832	.6217	.6591	.6950	.7290	.7611	.7910	.8186	.8438	.8665	8869	.9049	.9207	.9345	.9463	.9564	.9648	.9719	.9778	.9826	.9864	.9895	.9920	.9940	.9955	9966	.9975	.9982	7866.	.01
00.	.5000	.5398	.5793	.6179	.6554	.6915	.7257	.7580	.7881	.8159	.8414	.8643	.8849	.9032	.9193	.9332	.9452	.9554	.9641	.9713	.9772	.9821	.9861	.9893	.9918	.9938	.9953	9965	.9974	.9981	9866.	00.
	0.0	0.1	0.2	0.3	0.4	0.5	9.0	0.7	0.8	0.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	

# $F_Z$ table