# Quantiles of the standard normal distribution

|      | 0.00   | 0.01   | 0.02   | 0.03   | 0.04   | 0.05   | 0.06   | 0.07   | 0.08   | 0.09   |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0  | 0.5000 | 0.5040 | 0.5080 | 0.5120 | 0.5160 | 0.5199 | 0.5239 | 0.5279 | 0.5319 | 0.5359 |
| 0.1  | 0.5398 | 0.5438 | 0.5478 | 0.5517 | 0.5557 | 0.5596 | 0.5636 | 0.5675 | 0.5714 | 0.5753 |
| 0.2  | 0.5793 | 0.5832 | 0.5871 | 0.5910 | 0.5948 | 0.5987 | 0.6026 | 0.6064 | 0.6103 | 0.6141 |
| 0.3  | 0.6179 | 0.6217 | 0.6255 | 0.6293 | 0.6331 | 0.6368 | 0.6406 | 0.6443 | 0.6480 | 0.6517 |
| 0.4  | 0.6554 | 0.6591 | 0.6628 | 0.6664 | 0.6700 | 0.6736 | 0.6772 | 0.6808 | 0.6844 | 0.6879 |
| 0.5  | 0.6915 | 0.6950 | 0.6985 | 0.7019 | 0.7054 | 0.7088 | 0.7123 | 0.7157 | 0.7190 | 0.7224 |
| 0.6  | 0.7257 | 0.7291 | 0.7324 | 0.7357 | 0.7389 | 0.7422 | 0.7454 | 0.7486 | 0.7517 | 0.7549 |
| 0.7  | 0.7580 | 0.7611 | 0.7642 | 0.7673 | 0.7704 | 0.7734 | 0.7764 | 0.7794 | 0.7823 | 0.7852 |
| 0.8  | 0.7881 | 0.7910 | 0.7939 | 0.7967 | 0.7995 | 0.8023 | 0.8051 | 0.8078 | 0.8106 | 0.8133 |
| 0.9  | 0.8159 | 0.8186 | 0.8212 | 0.8238 | 0.8264 | 0.8289 | 0.8315 | 0.8340 | 0.8365 | 0.8389 |
| 1.0  | 0.8413 | 0.8438 | 0.8461 | 0.8485 | 0.8508 | 0.8531 | 0.8554 | 0.8577 | 0.8599 | 0.8621 |
| 1.1  | 0.8643 | 0.8665 | 0.8686 | 0.8708 | 0.8729 | 0.8749 | 0.8770 | 0.8790 | 0.8810 | 0.8830 |
| 1.2  | 0.8849 | 0.8869 | 0.8888 | 0.8907 | 0.8925 | 0.8944 | 0.8962 | 0.8980 | 0.8997 | 0.9015 |
| 1.3  | 0.9032 | 0.9049 | 0.9066 | 0.9082 | 0.9099 | 0.9115 | 0.9131 | 0.9147 | 0.9162 | 0.9177 |
| 1.4  | 0.9192 | 0.9207 | 0.9222 | 0.9236 | 0.9251 | 0.9265 | 0.9279 | 0.9292 | 0.9306 | 0.9319 |
| 1.5  | 0.9332 | 0.9345 | 0.9357 | 0.9370 | 0.9382 | 0.9394 | 0.9406 | 0.9418 | 0.9429 | 0.9441 |
| 1.6  | 0.9452 | 0.9463 | 0.9474 | 0.9484 | 0.9495 | 0.9505 | 0.9515 | 0.9525 | 0.9535 | 0.9545 |
| 1.7  | 0.9554 | 0.9564 | 0.9573 | 0.9582 | 0.9591 | 0.9599 | 0.9608 | 0.9616 | 0.9625 | 0.9633 |
| 1.8  | 0.9641 | 0.9649 | 0.9656 | 0.9664 | 0.9671 | 0.9678 | 0.9686 | 0.9693 | 0.9699 | 0.9706 |
| 1.9  | 0.9713 | 0.9719 | 0.9726 | 0.9732 | 0.9738 | 0.9744 | 0.9750 | 0.9756 | 0.9761 | 0.9767 |
| 2.0  | 0.9772 | 0.9778 | 0.9783 | 0.9788 | 0.9793 | 0.9798 | 0.9803 | 0.9808 | 0.9812 | 0.9817 |
| 2.1  | 0.9821 | 0.9826 | 0.9830 | 0.9834 | 0.9838 | 0.9842 | 0.9846 | 0.9850 | 0.9854 | 0.9857 |
| 2.2  | 0.9861 | 0.9864 | 0.9868 | 0.9871 | 0.9875 | 0.9878 | 0.9881 | 0.9884 | 0.9887 | 0.9890 |
| 2.3  | 0.9893 | 0.9896 | 0.9898 | 0.9901 | 0.9904 | 0.9906 | 0.9909 | 0.9911 | 0.9913 | 0.9916 |
| 2.4  | 0.9918 | 0.9920 | 0.9922 | 0.9925 | 0.9927 | 0.9929 | 0.9931 | 0.9932 | 0.9934 | 0.9936 |
| 2.5  | 0.9938 | 0.9940 | 0.9941 | 0.9943 | 0.9945 | 0.9946 | 0.9948 | 0.9949 | 0.9951 | 0.9952 |
| 2.6  | 0.9953 | 0.9955 | 0.9956 | 0.9957 | 0.9959 | 0.9960 | 0.9961 | 0.9962 | 0.9963 | 0.9964 |
| 2.7  | 0.9965 | 0.9966 | 0.9967 | 0.9968 | 0.9969 | 0.9970 | 0.9971 | 0.9972 | 0.9973 | 0.9974 |
| 2.8  | 0.9974 | 0.9975 | 0.9976 | 0.9977 | 0.9977 | 0.9978 | 0.9979 | 0.9979 | 0.9980 | 0.9981 |
| 2.9  | 0.9981 | 0.9982 | 0.9982 | 0.9983 | 0.9984 | 0.9984 | 0.9985 | 0.9985 | 0.9986 | 0.9986 |
| 3.0  | 0.9987 | 0.9987 | 0.9987 | 0.9988 | 0.9988 | 0.9989 | 0.9989 | 0.9989 | 0.9990 | 0.9990 |
| 3.1  | 0.9990 | 0.9991 | 0.9991 | 0.9991 | 0.9992 | 0.9992 | 0.9992 | 0.9992 | 0.9993 | 0.9993 |
| 3.2  | 0.9993 | 0.9993 | 0.9994 | 0.9994 | 0.9994 | 0.9994 | 0.9994 | 0.9995 | 0.9995 | 0.9995 |
| 3.3  | 0.9995 | 0.9995 | 0.9995 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9996 | 0.9997 |
| 3.4  | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9997 | 0.9998 |
| 3.5  | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 | 0.9998 |
| 3.6  | 0.9998 | 0.9998 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| 3.7  | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| 3.8  | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| 3.9  | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

# Quantiles of the Student-$t$ distribution

| $n$ | 0.6 | 0.8 | 0.9 | 0.95 | 0.975 | 0.99 | 0.995 | 0.999 | 0.9995 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.3249 | 1.3764 | 3.0777 | 6.3138 | 12.706 | 31.821 | 63.657 | 318.31 | 636.62 |
| 2 | 0.2887 | 1.0607 | 1.8856 | 2.9200 | 4.3027 | 6.9646 | 9.9248 | 22.327 | 31.599 |
| 3 | 0.2767 | 0.9785 | 1.6377 | 2.3534 | 3.1824 | 4.5407 | 5.8409 | 10.215 | 12.924 |
| 4 | 0.2707 | 0.9410 | 1.5332 | 2.1318 | 2.7764 | 3.7469 | 4.6041 | 7.1732 | 8.6103 |
| 5 | 0.2672 | 0.9195 | 1.4759 | 2.0150 | 2.5706 | 3.3649 | 4.0321 | 5.8934 | 6.8688 |
| 6 | 0.2648 | 0.9057 | 1.4398 | 1.9432 | 2.4469 | 3.1427 | 3.7074 | 5.2076 | 5.9588 |
| 7 | 0.2632 | 0.8960 | 1.4149 | 1.8946 | 2.3646 | 2.9980 | 3.4995 | 4.7853 | 5.4079 |
| 8 | 0.2619 | 0.8889 | 1.3968 | 1.8595 | 2.3060 | 2.8965 | 3.3554 | 4.5008 | 5.0413 |
| 9 | 0.2610 | 0.8834 | 1.3830 | 1.8331 | 2.2622 | 2.8214 | 3.2498 | 4.2968 | 4.7809 |
| 10 | 0.2602 | 0.8791 | 1.3722 | 1.8125 | 2.2281 | 2.7638 | 3.1693 | 4.1437 | 4.5869 |
| 11 | 0.2596 | 0.8755 | 1.3634 | 1.7959 | 2.2010 | 2.7181 | 3.1058 | 4.0247 | 4.4370 |
| 12 | 0.2590 | 0.8726 | 1.3562 | 1.7823 | 2.1788 | 2.6810 | 3.0545 | 3.9296 | 4.3178 |
| 13 | 0.2586 | 0.8702 | 1.3502 | 1.7709 | 2.1604 | 2.6503 | 3.0123 | 3.8520 | 4.2208 |
| 14 | 0.2582 | 0.8681 | 1.3450 | 1.7613 | 2.1448 | 2.6245 | 2.9768 | 3.7874 | 4.1405 |
| 15 | 0.2579 | 0.8662 | 1.3406 | 1.7531 | 2.1314 | 2.6025 | 2.9467 | 3.7328 | 4.0728 |
| 16 | 0.2576 | 0.8647 | 1.3368 | 1.7459 | 2.1199 | 2.5835 | 2.9208 | 3.6862 | 4.0150 |
| 17 | 0.2573 | 0.8633 | 1.3334 | 1.7396 | 2.1098 | 2.5669 | 2.8982 | 3.6458 | 3.9651 |
| 18 | 0.2571 | 0.8620 | 1.3304 | 1.7341 | 2.1009 | 2.5524 | 2.8784 | 3.6105 | 3.9216 |
| 19 | 0.2569 | 0.8610 | 1.3277 | 1.7291 | 2.0930 | 2.5395 | 2.8609 | 3.5794 | 3.8834 |
| 20 | 0.2567 | 0.8600 | 1.3253 | 1.7247 | 2.0860 | 2.5280 | 2.8453 | 3.5518 | 3.8495 |
| 21 | 0.2566 | 0.8591 | 1.3232 | 1.7207 | 2.0796 | 2.5176 | 2.8314 | 3.5272 | 3.8193 |
| 22 | 0.2564 | 0.8583 | 1.3212 | 1.7171 | 2.0739 | 2.5083 | 2.8188 | 3.5050 | 3.7921 |
| 23 | 0.2563 | 0.8575 | 1.3195 | 1.7139 | 2.0687 | 2.4999 | 2.8073 | 3.4850 | 3.7676 |
| 24 | 0.2562 | 0.8569 | 1.3178 | 1.7109 | 2.0639 | 2.4922 | 2.7969 | 3.4668 | 3.7454 |
| 25 | 0.2561 | 0.8562 | 1.3163 | 1.7081 | 2.0595 | 2.4851 | 2.7874 | 3.4502 | 3.7251 |
| 26 | 0.2560 | 0.8557 | 1.3150 | 1.7056 | 2.0555 | 2.4786 | 2.7787 | 3.4350 | 3.7066 |
| 27 | 0.2559 | 0.8551 | 1.3137 | 1.7033 | 2.0518 | 2.4727 | 2.7707 | 3.4210 | 3.6896 |
| 28 | 0.2558 | 0.8546 | 1.3125 | 1.7011 | 2.0484 | 2.4671 | 2.7633 | 3.4082 | 3.6739 |
| 29 | 0.2557 | 0.8542 | 1.3114 | 1.6991 | 2.0452 | 2.4620 | 2.7564 | 3.3962 | 3.6594 |
| 30 | 0.2556 | 0.8538 | 1.3104 | 1.6973 | 2.0423 | 2.4573 | 2.7500 | 3.3852 | 3.6460 |
| $\infty$ | 0.2533 | 0.8416 | 1.2816 | 1.6449 | 1.9600 | 2.3263 | 2.5758 | 3.0903 | 3.2906 |

# Quantiles of the $\chi^2$ distribution

| $n$ | 0.01 | 0.025 | 0.05 | 0.1 | 0.5 | 0.9 | 0.95 | 0.975 | 0.99 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0002 | 0.0010 | 0.0039 | 0.0158 | 0.4549 | 2.7055 | 3.8415 | 5.0239 | 6.6349 |
| 2 | 0.0201 | 0.0506 | 0.1026 | 0.2107 | 1.3863 | 4.6052 | 5.9915 | 7.3778 | 9.2103 |
| 3 | 0.1148 | 0.2158 | 0.3518 | 0.5844 | 2.3660 | 6.2514 | 7.8147 | 9.3484 | 11.345 |
| 4 | 0.2971 | 0.4844 | 0.7107 | 1.0636 | 3.3567 | 7.7794 | 9.4877 | 11.143 | 13.277 |
| 5 | 0.5543 | 0.8312 | 1.1455 | 1.6103 | 4.3515 | 9.2364 | 11.070 | 12.833 | 15.086 |
| 6 | 0.8721 | 1.2373 | 1.6354 | 2.2041 | 5.3481 | 10.645 | 12.592 | 14.449 | 16.812 |
| 7 | 1.2390 | 1.6899 | 2.1674 | 2.8331 | 6.3458 | 12.017 | 14.067 | 16.013 | 18.475 |
| 8 | 1.6465 | 2.1797 | 2.7326 | 3.4895 | 7.3441 | 13.362 | 15.507 | 17.535 | 20.090 |
| 9 | 2.0879 | 2.7004 | 3.3251 | 4.1682 | 8.3428 | 14.684 | 16.919 | 19.023 | 21.666 |
| 10 | 2.5582 | 3.2470 | 3.9403 | 4.8652 | 9.3418 | 15.987 | 18.307 | 20.483 | 23.209 |
| 11 | 3.0535 | 3.8157 | 4.5748 | 5.5778 | 10.341 | 17.275 | 19.675 | 21.920 | 24.725 |
| 12 | 3.5706 | 4.4038 | 5.2260 | 6.3038 | 11.340 | 18.549 | 21.026 | 23.337 | 26.217 |
| 13 | 4.1069 | 5.0088 | 5.8919 | 7.0415 | 12.340 | 19.812 | 22.362 | 24.736 | 27.688 |
| 14 | 4.6604 | 5.6287 | 6.5706 | 7.7895 | 13.339 | 21.064 | 23.685 | 26.119 | 29.141 |
| 15 | 5.2293 | 6.2621 | 7.2609 | 8.5468 | 14.339 | 22.307 | 24.996 | 27.488 | 30.578 |
| 16 | 5.8122 | 6.9077 | 7.9616 | 9.3122 | 15.338 | 23.542 | 26.296 | 28.845 | 32.000 |
| 17 | 6.4078 | 7.5642 | 8.6718 | 10.085 | 16.338 | 24.769 | 27.587 | 30.191 | 33.409 |
| 18 | 7.0149 | 8.2307 | 9.3905 | 10.865 | 17.338 | 25.989 | 28.869 | 31.526 | 34.805 |
| 19 | 7.6327 | 8.9065 | 10.117 | 11.651 | 18.338 | 27.204 | 30.144 | 32.852 | 36.191 |
| 20 | 8.2604 | 9.5908 | 10.851 | 12.443 | 19.337 | 28.412 | 31.410 | 34.170 | 37.566 |
| 21 | 8.8972 | 10.283 | 11.591 | 13.240 | 20.337 | 29.615 | 32.671 | 35.479 | 38.932 |
| 22 | 9.5425 | 10.982 | 12.338 | 14.041 | 21.337 | 30.813 | 33.924 | 36.781 | 40.289 |
| 23 | 10.196 | 11.689 | 13.091 | 14.848 | 22.337 | 32.007 | 35.172 | 38.076 | 41.638 |
| 24 | 10.856 | 12.401 | 13.848 | 15.659 | 23.337 | 33.196 | 36.415 | 39.364 | 42.980 |
| 25 | 11.524 | 13.120 | 14.611 | 16.473 | 24.337 | 34.382 | 37.652 | 40.646 | 44.314 |
| 26 | 12.198 | 13.844 | 15.379 | 17.292 | 25.336 | 35.563 | 38.885 | 41.923 | 45.642 |
| 27 | 12.879 | 14.573 | 16.151 | 18.114 | 26.336 | 36.741 | 40.113 | 43.195 | 46.963 |
| 28 | 13.565 | 15.308 | 16.928 | 18.939 | 27.336 | 37.916 | 41.337 | 44.461 | 48.278 |
| 29 | 14.256 | 16.047 | 17.708 | 19.768 | 28.336 | 39.087 | 42.557 | 45.722 | 49.588 |
| 30 | 14.953 | 16.791 | 18.493 | 20.599 | 29.336 | 40.256 | 43.773 | 46.979 | 50.892 |