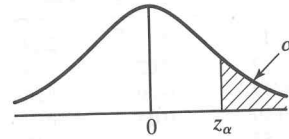


Table A.3 Cumulative Normal Distribution

$$\phi(z_\alpha) = \int_{-\infty}^{z_\alpha} \frac{1}{\sqrt{2\pi}} e^{-u^2/2} du = 1 - \alpha$$



| $z_\alpha$ | 0.00     | 0.01     | 0.02     | 0.03     | 0.04     | $z_\alpha$ |
|------------|----------|----------|----------|----------|----------|------------|
| 0.0        | 0.500 00 | 0.503 99 | 0.507 98 | 0.511 97 | 0.515 95 | 0.0        |
| 0.1        | 0.539 83 | 0.543 79 | 0.547 76 | 0.551 72 | 0.555 67 | 0.1        |
| 0.2        | 0.579 26 | 0.583 17 | 0.587 06 | 0.590 95 | 0.594 83 | 0.2        |
| 0.3        | 0.617 91 | 0.621 72 | 0.625 51 | 0.629 30 | 0.633 07 | 0.3        |
| 0.4        | 0.655 42 | 0.659 10 | 0.662 76 | 0.666 40 | 0.670 03 | 0.4        |
| 0.5        | 0.691 46 | 0.694 97 | 0.698 47 | 0.701 94 | 0.705 40 | 0.5        |
| 0.6        | 0.725 75 | 0.729 07 | 0.732 37 | 0.735 65 | 0.738 91 | 0.6        |
| 0.7        | 0.758 03 | 0.761 15 | 0.764 24 | 0.767 30 | 0.770 35 | 0.7        |
| 0.8        | 0.788 14 | 0.791 03 | 0.793 89 | 0.796 73 | 0.799 54 | 0.8        |
| 0.9        | 0.815 94 | 0.818 59 | 0.821 21 | 0.823 81 | 0.826 39 | 0.9        |
| 1.0        | 0.841 34 | 0.843 75 | 0.846 13 | 0.848 49 | 0.850 83 | 1.0        |
| 1.1        | 0.864 33 | 0.866 50 | 0.868 64 | 0.870 76 | 0.872 85 | 1.1        |
| 1.2        | 0.884 93 | 0.886 86 | 0.888 77 | 0.890 65 | 0.892 51 | 1.2        |
| 1.3        | 0.903 20 | 0.904 90 | 0.906 58 | 0.908 24 | 0.909 88 | 1.3        |
| 1.4        | 0.919 24 | 0.920 73 | 0.922 19 | 0.923 64 | 0.925 06 | 1.4        |
| 1.5        | 0.933 19 | 0.934 48 | 0.935 74 | 0.936 99 | 0.938 22 | 1.5        |
| 1.6        | 0.945 20 | 0.946 30 | 0.947 38 | 0.948 45 | 0.949 50 | 1.6        |
| 1.7        | 0.955 43 | 0.956 37 | 0.957 28 | 0.958 18 | 0.959 07 | 1.7        |
| 1.8        | 0.964 07 | 0.964 85 | 0.965 62 | 0.966 37 | 0.967 11 | 1.8        |
| 1.9        | 0.971 28 | 0.971 93 | 0.972 57 | 0.973 20 | 0.973 81 | 1.9        |
| 2.0        | 0.977 25 | 0.977 78 | 0.978 31 | 0.978 82 | 0.979 32 | 2.0        |
| 2.1        | 0.982 14 | 0.982 57 | 0.983 00 | 0.983 41 | 0.983 82 | 2.1        |
| 2.2        | 0.986 10 | 0.986 45 | 0.986 79 | 0.987 13 | 0.987 45 | 2.2        |
| 2.3        | 0.989 28 | 0.989 56 | 0.989 83 | 0.990 10 | 0.990 36 | 2.3        |
| 2.4        | 0.991 80 | 0.992 02 | 0.992 24 | 0.992 45 | 0.992 66 | 2.4        |
| 2.5        | 0.993 79 | 0.993 96 | 0.994 13 | 0.994 30 | 0.994 46 | 2.5        |
| 2.6        | 0.995 34 | 0.995 47 | 0.995 60 | 0.995 73 | 0.995 85 | 2.6        |
| 2.7        | 0.996 53 | 0.996 64 | 0.996 74 | 0.996 83 | 0.996 93 | 2.7        |
| 2.8        | 0.997 44 | 0.997 52 | 0.997 60 | 0.997 67 | 0.997 74 | 2.8        |
| 2.9        | 0.998 13 | 0.998 19 | 0.998 25 | 0.998 31 | 0.998 36 | 2.9        |
| 3.0        | 0.998 65 | 0.998 69 | 0.998 74 | 0.998 78 | 0.998 82 | 3.0        |
| 3.1        | 0.999 03 | 0.999 06 | 0.999 10 | 0.999 13 | 0.999 16 | 3.1        |
| 3.2        | 0.999 31 | 0.999 34 | 0.999 36 | 0.999 38 | 0.999 40 | 3.2        |
| 3.3        | 0.999 52 | 0.999 53 | 0.999 55 | 0.999 57 | 0.999 58 | 3.3        |
| 3.4        | 0.999 66 | 0.999 68 | 0.999 69 | 0.999 70 | 0.999 71 | 3.4        |
| 3.5        | 0.999 77 | 0.999 78 | 0.999 78 | 0.999 79 | 0.999 80 | 3.5        |
| 3.6        | 0.999 84 | 0.999 85 | 0.999 85 | 0.999 86 | 0.999 86 | 3.6        |
| 3.7        | 0.999 89 | 0.999 90 | 0.999 90 | 0.999 90 | 0.999 91 | 3.7        |
| 3.8        | 0.999 93 | 0.999 93 | 0.999 93 | 0.999 94 | 0.999 94 | 3.8        |
| 3.9        | 0.999 95 | 0.999 95 | 0.999 96 | 0.999 96 | 0.999 96 | 3.9        |

continues...

Table A.3 Continued

| $z_\alpha$ | 0.05     | 0.06     | 0.07     | 0.08     | 0.09     | $z_\alpha$ |
|------------|----------|----------|----------|----------|----------|------------|
| 0.0        | 0.519 94 | 0.523 92 | 0.527 90 | 0.531 88 | 0.535 86 | 0.0        |
| 0.1        | 0.559 62 | 0.563 56 | 0.567 49 | 0.571 42 | 0.575 34 | 0.1        |
| 0.2        | 0.598 71 | 0.602 57 | 0.606 42 | 0.610 26 | 0.614 09 | 0.2        |
| 0.3        | 0.636 83 | 0.640 58 | 0.644 31 | 0.648 03 | 0.651 73 | 0.3        |
| 0.4        | 0.673 64 | 0.677 24 | 0.680 82 | 0.684 38 | 0.687 93 | 0.4        |
| 0.5        | 0.708 84 | 0.712 26 | 0.715 66 | 0.719 04 | 0.722 40 | 0.5        |
| 0.6        | 0.742 15 | 0.745 37 | 0.748 57 | 0.751 75 | 0.754 90 | 0.6        |
| 0.7        | 0.773 37 | 0.776 37 | 0.779 35 | 0.782 30 | 0.785 23 | 0.7        |
| 0.8        | 0.802 34 | 0.805 10 | 0.807 85 | 0.810 57 | 0.813 27 | 0.8        |
| 0.9        | 0.824 94 | 0.831 47 | 0.833 97 | 0.836 46 | 0.838 91 | 0.9        |
| 1.0        | 0.853 14 | 0.855 43 | 0.857 69 | 0.859 93 | 0.862 14 | 1.0        |
| 1.1        | 0.874 93 | 0.876 97 | 0.879 00 | 0.881 00 | 0.882 97 | 1.1        |
| 1.2        | 0.894 35 | 0.896 16 | 0.897 96 | 0.899 73 | 0.901 47 | 1.2        |
| 1.3        | 0.911 49 | 0.913 08 | 0.914 65 | 0.916 21 | 0.917 73 | 1.3        |
| 1.4        | 0.926 47 | 0.927 85 | 0.929 22 | 0.930 56 | 0.931 89 | 1.4        |
| 1.5        | 0.939 43 | 0.940 62 | 0.941 79 | 0.942 95 | 0.944 08 | 1.5        |
| 1.6        | 0.950 53 | 0.951 54 | 0.952 54 | 0.953 52 | 0.954 48 | 1.6        |
| 1.7        | 0.959 94 | 0.960 80 | 0.961 64 | 0.962 46 | 0.963 27 | 1.7        |
| 1.8        | 0.967 84 | 0.968 56 | 0.969 26 | 0.969 95 | 0.970 62 | 1.8        |
| 1.9        | 0.974 41 | 0.975 00 | 0.975 58 | 0.976 15 | 0.976 70 | 1.9        |
| 2.0        | 0.979 82 | 0.980 30 | 0.980 77 | 0.981 24 | 0.981 69 | 2.0        |
| 2.1        | 0.984 22 | 0.984 61 | 0.985 00 | 0.985 37 | 0.985 74 | 2.1        |
| 2.2        | 0.987 78 | 0.988 09 | 0.988 40 | 0.988 70 | 0.988 99 | 2.2        |
| 2.3        | 0.990 61 | 0.990 86 | 0.991 11 | 0.991 34 | 0.991 58 | 2.3        |
| 2.4        | 0.992 86 | 0.993 05 | 0.993 24 | 0.993 43 | 0.993 61 | 2.4        |
| 2.5        | 0.994 61 | 0.994 77 | 0.994 92 | 0.995 06 | 0.995 20 | 2.5        |
| 2.6        | 0.995 98 | 0.996 09 | 0.996 21 | 0.996 32 | 0.996 43 | 2.6        |
| 2.7        | 0.997 02 | 0.997 11 | 0.997 20 | 0.997 28 | 0.997 36 | 2.7        |
| 2.8        | 0.997 81 | 0.997 88 | 0.997 95 | 0.998 01 | 0.998 07 | 2.8        |
| 2.9        | 0.998 41 | 0.998 46 | 0.998 51 | 0.998 56 | 0.998 61 | 2.9        |
| 3.0        | 0.998 86 | 0.998 89 | 0.998 93 | 0.998 97 | 0.999 00 | 3.0        |
| 3.1        | 0.999 18 | 0.999 21 | 0.999 24 | 0.999 26 | 0.999 29 | 3.1        |
| 3.2        | 0.999 42 | 0.999 44 | 0.999 46 | 0.999 48 | 0.999 50 | 3.2        |
| 3.3        | 0.999 60 | 0.999 61 | 0.999 62 | 0.999 64 | 0.999 65 | 3.3        |
| 3.4        | 0.999 72 | 0.999 73 | 0.999 74 | 0.999 75 | 0.999 76 | 3.4        |
| 3.5        | 0.999 81 | 0.999 81 | 0.999 82 | 0.999 83 | 0.999 83 | 3.5        |
| 3.6        | 0.999 87 | 0.999 87 | 0.999 88 | 0.999 88 | 0.999 89 | 3.6        |
| 3.7        | 0.999 91 | 0.999 92 | 0.999 92 | 0.999 92 | 0.999 92 | 3.7        |
| 3.8        | 0.999 94 | 0.999 94 | 0.999 95 | 0.999 95 | 0.999 95 | 3.8        |
| 3.9        | 0.999 96 | 0.999 96 | 0.999 96 | 0.999 97 | 0.999 97 | 3.9        |

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