Standard Normal CDF — Left-Tail Table

How to use the table

This table reports $\Phi(z)=P(Z\le z)$, the standard normal cumulative area to the LEFT.

For $X\sim N(\mu,\sigma^2)$, first calculate $z=(x-\mu)/\sigma$. For a right tail use $1-\Phi(z)$. For an interval subtract two left-tail areas.

Displayed z values have 0.1 increments; for other z use SciPy, calculator or interpolation with caution.

Verified reference values

z=-3.0 : $\Phi(z)=0.00135$

z=-2.9 : $\Phi(z)=0.00187$

z=-2.8 : $\Phi(z)=0.00256$

z=-2.7 : $\Phi(z)=0.00347$

z=-2.6 : $\Phi(z)=0.00466$

z=-2.5 : $\Phi(z)=0.00621$

z=-2.4 : $\Phi(z)=0.00820$

z=-2.3 : $\Phi(z)=0.01072$

z=-2.2 : $\Phi(z)=0.01390$

z=-2.1 : $\Phi(z)=0.01786$

z=-2.0 : $\Phi(z)=0.02275$

z=-1.9 : $\Phi(z)=0.02872$

z=-1.8 : $\Phi(z)=0.03593$

z=-1.7 : $\Phi(z)=0.04457$

z=-1.6 : $\Phi(z)=0.05480$

z=-1.5 : $\Phi(z)=0.06681$

z=-1.4 : $\Phi(z)=0.08076$

z=-1.3 : $\Phi(z)=0.09680$

z=-1.2 : $\Phi(z)=0.11507$

z=-1.1 : $\Phi(z)=0.13567$

z=-1.0 : $\Phi(z)=0.15866$

z=-0.9 : $\Phi(z)=0.18406$

z=-0.8 : $\Phi(z)=0.21186$

z=-0.7 : $\Phi(z)=0.24196$

z=-0.6 : $\Phi(z)=0.27425$

z=-0.5 : $\Phi(z)=0.30854$

z=-0.4 : $\Phi(z)=0.34458$

z=-0.3 : Φ(z)=0.38209

z=-0.2 : Φ(z)=0.42074

z=-0.1 : Φ(z)=0.46017

z=+0.0 : Φ(z)=0.50000

z=+0.1 : Φ(z)=0.53983

z=+0.2 : Φ(z)=0.57926

z=+0.3 : Φ(z)=0.61791

z=+0.4 : Φ(z)=0.65542

z=+0.5 : Φ(z)=0.69146

z=+0.6 : Φ(z)=0.72575

z=+0.7 : Φ(z)=0.75804

z=+0.8 : Φ(z)=0.78814

z=+0.9 : Φ(z)=0.81594

z=+1.0 : Φ(z)=0.84134

z=+1.1 : Φ(z)=0.86433

z=+1.2 : Φ(z)=0.88493

z=+1.3 : Φ(z)=0.90320

z=+1.4 : Φ(z)=0.91924

z=+1.5 : Φ(z)=0.93319

z=+1.6 : Φ(z)=0.94520

z=+1.7 : Φ(z)=0.95543

z=+1.8 : Φ(z)=0.96407

z=+1.9 : Φ(z)=0.97128

z=+2.0 : Φ(z)=0.97725

z=+2.1 : Φ(z)=0.98214

z=+2.2 : Φ(z)=0.98610

z=+2.3 : Φ(z)=0.98928

z=+2.4 : Φ(z)=0.99180

z=+2.5 : Φ(z)=0.99379

z=+2.6 : Φ(z)=0.99534

z=+2.7 : Φ(z)=0.99653

z=+2.8 : Φ(z)=0.99744

z=+2.9 : Φ(z)=0.99813

z=+3.0 : Φ(z)=0.99865