

Standard Normal Distribution

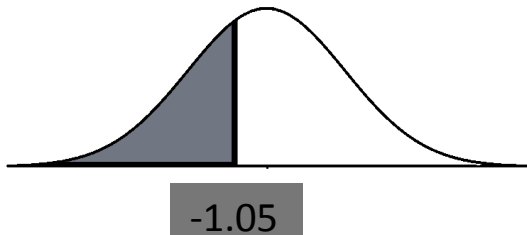
TI Calculator Steps: Calculating area under the standard normal curve between a and b.

1. Press **2nd** then, **VARS** keys to access the DISTR (distributions) menu.
2. Select **normalcdf** and click **ENTER**.
3. Enter the **Lower bound**, **upper bound**, **mean** , and **standard deviation** σ .
If you have TI 83, then you will have normalcdf(lower bound, upper bound, mean, standard deviation).

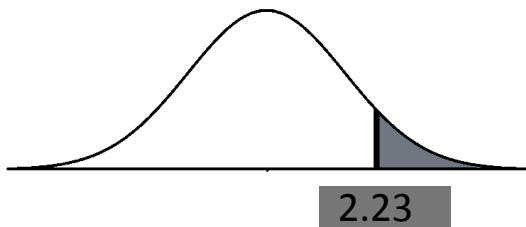
Note: 1. Use -1E99 for negative infinity, and use E99 for positive infinity.
2. TI calculator has a default mean of 0 and standard deviation of 1. If you don't input the mean and standard deviation, it will use the default values.

Example:

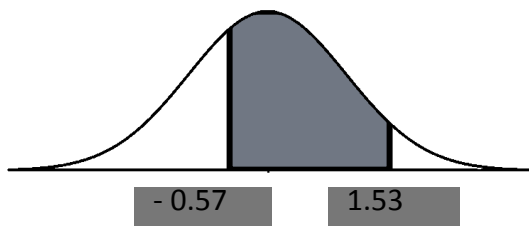
1. Find $P(Z < -1.05)$, which is the area under the standard normal curve to the left of $z = -1.05$.
 $P(Z < -1.05) = \text{normalcdf}(-1E99, -1.05, 0, 1) = 0.1469$



2. Find $P(Z > 2.23)$, which is the area under the standard normal curve to the right of $z = 2.23$.
 $P(Z > 2.23) = \text{normalcdf}(2.23, E99, 0, 1) = 0.01287$



3. Find $P(-0.57 < Z < 1.53)$, the area under the standard normal curve between $z = -0.57$ and $z = 1.53$.
 $P(-0.57 < z < 1.53) = \text{normalcdf}(-0.57, 1.53, 0, 1) = 0.6527$

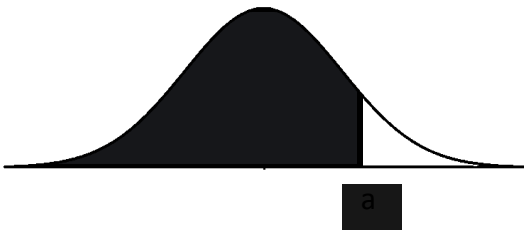


TI Calculator Steps: Find z value from the given area.

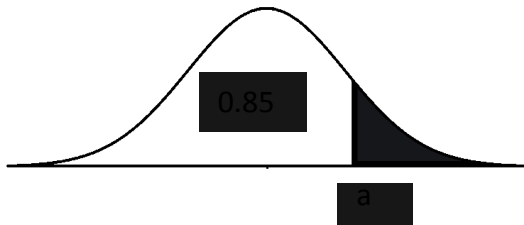
1. Press **2nd** then, **VAR** keys to access the DISTR (distributions) menu.
2. Select **invNorm** and click **ENTER**.
3. Enter the **area on the left** , **mean** **standard deviation σ**

Example:

1. Given $P(z < a) = 0.95$. Find a
 $a = \text{invNorm}(0.95, 0, 1) = 1.645$



2. Given $P(z > a) = 0.15$. Find a.
Note: area on the left is $1 - 0.15 = 0.85$
 $a = \text{invNorm}(0.85, 0, 1) = 1.036$



Practice problems:

1. Use a TI calculator to find the following probabilities.
 - a. $P(z < 0.56)$
 - b. $P(z > 1.07)$
 - c. $P(z < -2.89)$
 - d. $P(2.00 < z < 3.01)$
 - e. $P(-0.27 < z < 3.23)$
 - f. $P(z > 5.56)$
2. Use a TI calculator to find z.
 - a. Given $P(z < a) = 0.05$, find a.
 - b. Given $P(z > a) = 0.825$, find a.
 - c. Find $Z_{0.02}$
 - d. Find $Z_{0.15}$