

How to Calculate Normal Probabilities on a TI-84 Calculator

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The TI-84 calculator is a powerful tool that can be used to calculate normal probabilities. To do this, you will need to follow a few steps. First, enter the mean and standard deviation of the normal distribution into the calculator. Then, navigate to the "Distr" menu and select "normalcdf". Enter the lower and upper limits of the desired range of probabilities and press enter. The calculator will then display the calculated probability. This method can be used to solve a wide range of normal probability problems quickly and accurately.

Calculate Normal Probabilities on a TI-84 Calculator

The is the most commonly used distributions in all of statistics. This tutorial explains how to use the following functions on a TI-84 calculator to find normal distribution probabilities:

normalpdf(x , μ , σ) returns the probability associated with the normal pdf where:

x = individual value
 μ = population mean
 σ = population standard deviation

normalcdf(lower_x, upper_x, μ , σ) returns the cumulative probability associated with the normal cdf between two values.

where:

lower_x = lower individual value
upper_x = upper individual value
 μ = population mean
 σ = population

standard deviation

Both of these functions can be accessed on a TI-84 calculator by pressing 2nd and then pressing vars. This will take you to a DISTR screen where you can then use `normalpdf()` and `normalcdf()`:

```
DISTR DRAW
1:normalpdf(
2:normalcdf(
3:invNorm(
4:invT(
5:tPdf(
6:tcdf(
7:χ²pdf(
8:χ²cdf(
```

The following examples illustrate how to use these functions to answer different questions.

Example 1: Normal probability greater than x

Question: For a normal distribution with mean = 40 and standard deviation = 6, find the probability that a value is greater than 45.

Answer: Use the function `normalcdf(x, 10000, μ , σ)`:

$$\text{normalcdf}(45, 10000, 40, 6) = 0.2023$$

Note: Since the function requires an upper_x value, we just use 10000.

Example 2: Normal probability less than x

Question: For a normal distribution with mean = 100 and standard deviation = 11.3, find the probability that a value is less than 98.

Answer: Use the function $\text{normalcdf}(-10000, x, \mu, \sigma)$:

Note: Since the function requires a lower_x value, we just use -10000.

Example 3: Normal probability between two values

Question: For a normal distribution with mean = 50 and standard deviation = 4, find the probability that a value is between 48 and 52.

Answer: Use the function $\text{normalcdf}(\text{smaller}_x, \text{larger}_x, \mu, \sigma)$

$$\text{normalcdf}(48, 52, 50, 4) = 0.3829$$

Example 4: Normal probability outside of two values

Question: For a normal distribution with mean = 22 and

standard deviation = 4, find the probability that a value is less than 20 or greater than 24

Answer: Use the function $\text{normalcdf}(\text{smaller_x}, \mu, \sigma) + \text{normalcdf}(\text{larger_x}, 10000, \mu, \sigma)$

$\text{normalcdf}(-10000, 20, 22, 4) + \text{normalcdf}(24, 10000, 22, 4) = 0.6171$

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