

Normal Distribution

TI Calculator Steps: Calculate probability with normal distribution

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 .
If you have TI 83, then you will have normalcdf(lower bound, upper bound, mean, standard deviation).
Note: Use -1E99 for negative infinity, and use E99 for positive infinity.

TI Calculator Steps: Find X value from the given probability (percent).

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

Example: The IQ scores for college students are normally distributed with mean of 105 and a standard deviation of 13.

- a. A student is randomly selected, find the probability that the student has IQ score less than 112.
X: IQ score
 $P(X < 112) = \text{normalcdf}(-E99, 112, 105, 13) = 0.7049$
- b. A student is randomly selected, find the probability that the student has IQ score between 95 and 110.
X: IQ score
 $P(95 < X < 110) = \text{normalcdf}(95, 110, 105, 13) = 0.4289$
- c. Find the 25th percentile (P_{25})
 $X = \text{invNorm}(0.25, 105, 13) = 96.23$

Practice Problems

1. The scores on a test are normally distributed with a mean of 65 and a standard deviation of 12.
 - a. What is the probability that a randomly selected student has a test score more than 70?
 - b. What is the probability that a randomly selected student has a test score less than 50?
 - c. The instructor requires mandatory tutoring for students with the lowest 10% of test score, what is the cutoff score?

