

TI-83 Lab 14 For Statistics 213

Topics: probabilities and percentiles for standard and nonstandard normal distribution

Dataset(s): none

Calculating Probabilities and Percentiles For The Standard and Nonstandard Normal Distribution.

- Assume the IQ scores for 16 year olds is $X \sim N(100, 16^2)$. What is the probability a student randomly picked from the 16 year olds has an IQ score below 84?
- One way to do this would be to first *standardize* this probability, $P(X < 84) = P\left(Z < \frac{84-100}{16}\right) = P(Z < -1)$ and then use the “2ndDISTR/normalcdf” key to determine this probability:

– 2nd DISTR 2 (-) 1 2nd EE 99, 84 , (-) 1) ENTER

The value 0.1587 appears.

- Another way to do this is would be to calculate the probability $P(X < 84)$ directly. This also requires the use of the “2ndDISTR/normalcdf” key:

– 2nd DISTR 2 (-) 1 2nd EE 99 , 84, 100, 16) ENTER

The value 0.1587 appears.

- Percentiles can also calculated. For example, in order to answer the question, “What is the 95th percentile for the 16 year old students?”, use the “2ndDISTR/invNorm” key:

– 2nd DISTR 3 ENTER .95 , 100 , 16) ENTER

The value 126.32 is returned.