TI–84+ Lab 8 For Mathematics 224

Topics: probabilities for standard and nonstandard normal distribution

Dataset(s): none

Calculating Probabilities For The Standard and Nonstandard Normal Distribution.

- Assume the IQ scores for 16 year olds is normal where $\mu = 100$ and $\sigma = 16$. 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 , 100, 16) ENTER

  The value 0.1587 appears.

Graphing The Normal Distribution. To graph the normal distribution with mean $\mu = -1$ and standard deviation $\sigma = 1$, type

- WINDOW -4 2 1 -0.2 0.6 0.1 1
- Y = 2nd DISTR 1:normalpdf(X , -1 , 1) GRAPH