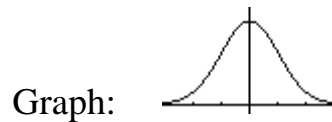


6.1 & 6.2 THE STANDARD NORMAL DISTRIBUTION Chapter Problem Pg. 249

Normal Distribution: a distribution of a continuous random variable with a graph that is symmetric and bell-shaped.

$$y = \frac{e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}}{\sigma\sqrt{2\pi}}$$



Uniform Distribution: a probability distribution in which every value of the random variable is equally likely. The values spread evenly over the range of possibilities. The graph of a uniform distribution results in a rectangular shape.

Density Curve - graph of a continuous probability distribution

1. Total area under the curve is 1.
2. Every point on the curve must have a vertical height that is between 0 and 1.

Uniform Density Curves

***#6, pg. 261

***#8, pg. 261

Standard Normal Distributions

In this section we study the standard normal distribution, which is a normal probability distribution with mean $\mu = 0$ and standard deviation $\sigma = 1$

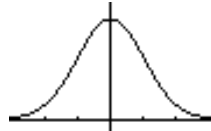
Real usefulness is later for different means and standard Deviations

GIVEN Z-SCORE, FIND PROBABILITY-USING TABLE A-2

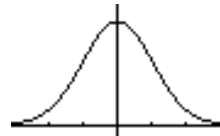
$P(0 < z < 1)$



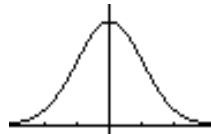
$P(z > .4)$



$P(-1.2 < z < 0)$



$P(-1.2 < z < .4)$

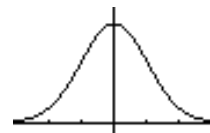


$P(z < -2)$

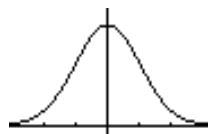


EMPIRICAL RULES Chapter 2 68% within 1σ , 95% within 2σ , 99.7 within 3σ

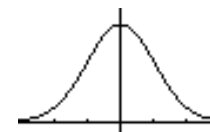
Within 1 standard deviation $P(-1 < z < 1)$



Within 2 standard deviations $P(-2 < z < 2)$



Within 3 standard deviations $P(-3 < z < 3)$



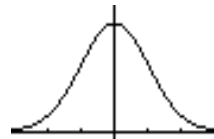
If Random Variable is Continuous $P(z=a) = 0$

*****Note difference from discrete*****

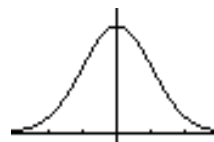
Note: z scores are positive or negative, but Probabilities are from 0 to 1

GIVEN PROBABILITY, FIND Z-SCORE: Often probabilities are given as percents.

***#50, pg. 263

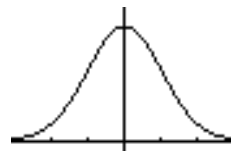


***#52, pg. 263



Z_α denotes the z score with an area of α to the right.

***Find $Z_{.01}$



***Find $Z_{.02}$

