STAT/MA 41600
Practice Problems: November 10, 2014

1. Assume X is normally distributed with $\mathbb{E}(X) = 4.2$ and $\operatorname{Var} X = 50.41$.

a. Find $P(X \leq 10)$.

b. Find $P(X \leq 0)$.

c. Find $P(0 \leq X \leq 10)$.

2. In a certain class, the student scores are approximately normally distributed, with mean 72.5% and standard deviation 6.9%. What percent of students score above 70%?

3. Find the value of a so that, if Z is a standard normal random variable, then

$$P(a \leq Z \leq .54) = 0.3898.$$

4. Assume that the height of an American female is normal with expected value $\mu = 64$ and standard deviation $\sigma = 12.8$.

a. What is the probability that an American female's height is 66 inches or taller?

b. The heights of 10 American females are measured (in inches). Assume that their heights are independent. What is the expected number of these females who have height 66 inches or taller?

5. The quantity of sugar X (measured in grams) in a randomly-selected piece of candy is normally distributed, with expected value $\mathbb{E}(X) = \mu = 22$ and variance $\mathrm{Var}(X) = \sigma^2 = 8$.

For which value of x is $P(X \leq x) = 0.1492$? In other words, find the quantity x of sugar, so that exactly 14.92% of the candy has less than x grams of sugar.