Exercise 2D.1

Suppose the distribution of height in feet in the U.S. is normally distributed with a mean of 5.5 feet and a standard deviation of 0.25 feet. What is the distribution of height in inches?

Exercise 2D.2

One kilogram is equal to 2.2 pounds. The weight of a randomly selected full term infant can be modeled as a random variable with mean 7.8 and standard deviation 1.77 pounds. Describe this distribution in kilograms.

Exercise 2D.3

If a random variable Z is standard normal, what is the distribution of $2Z - 10$?

Exercise 2D.4

If a random variable X is normally distributed with a mean of 25 and a standard deviation of 5, what will be the distribution of $\frac{X-25}{5}$?

Exercise 2D.5

The weight of jaguars is normally distributed with a mean of 168 pounds and a variance of 121 pounds^2.

(a) A single jaguar is captured and its weight is measured; it weighs 192 pounds. What is the z-score for this jaguar?

(b) What is the probability that a randomly captured jaguar weighs 192 pounds or more?

(c) Another jaguar is captured and it weighs 152 pounds. What is the probability that a randomly captured jaguar weighs 152 pounds or less?

Exercise 2D.6

Let X be the IQ scores for a certain population, and assume that X follows a normal distribution with $\mu = 100$ and $\sigma = 15$. Find x such that:

(a) $P(X > x) = 0.25$ (What percentile is this?)

(b) $P(X < x) = 0.95$ (What percentile is this?)

(c) $P(X > x) = 0.75$ (What percentile is this?)