STAT 205, Spring 2015

Homework 4

Out: Thursday February 19. Due in: Thursday February 26

Please give in your answers on a single side of paper. Use R (required, copy and paste) and verify your answers using tables (optional).

1. The heights of a certain population of corn plants follow a normal distribution with mean 145 cm and standard deviation 22 cm.

   (a) What percentage of the plants are between 135 and 155 cm tall?

   (b) Suppose we were to choose at random from the population a large number of samples of 16 plants each. In what percentage of the samples would the sample mean height be between 135 and 155 cm? (Hint: the random variable here is sample mean.)

   (c) If $\overline{Y}$ represents the mean height of a random sample of 36 plants from the population, what is $\Pr\{135 \leq \overline{Y} \leq 155\}$?