STAT/MA 41600
In-Class Problem Set #41: November 28, 2018

1. Purdue is conducting a study about students who fall asleep at the WALC building and then wake up and catch a bus at random times, to get back to their dormitory. Suppose that the average time such students wait for their bus to arrive is 6.3 minutes. Find a bound on the probability that a randomly selected student waits more than 8 minutes for a bus.

2. The height at a certain point of summer for a particular species of corn is randomly distributed, with mean height 5.2 feet, and standard deviation of 0.05 feet.
2a. Find a bound on the probability that a randomly chosen stalk of corn is 6 feet or higher at that point in the summertime.
2b. Find a bound on the probability that a randomly chosen stalk of corn is *outside the range* between 5 feet and 5.4 feet high at that point in the summertime.

3. Students who graduate from a certain department at Purdue are known to make a starting salary (on average) of $47,500 per year, with a standard deviation of $1,000.
3a. Give a bound for the probability that such a new alum of the university will make $50,000 or higher, upon graduation.
3b. Find a bound for the probability that a randomly selected alum will have a starting salary that is either less than $45,000 or more than $50,000.

4. (Review question) Suppose that we select 40 Purdue students, chosen at random, and we ask them whether they were close enough to the Bell Tower at that time, to have seen the clock fall near the Bell Tower yesterday.

Assume that a student only had a 2% chance of being nearby.

Find the probability that at least 2 of the 40 students saw the clock fall.