**Worksheet 8 – Chapter 4b**

Answer the following questions logically and legibly. **Show work and give probability statements** where appropriate. Give all probabilities to 4 decimal places.

**You may want to use the Normal and Exponential equations in EXCEL to answer these questions (pages 72-78 in Excel Manual).**

1. Customers arrive at a local ATM on average every 4 minutes. Assume the time between arrivals follows the exponential probability distribution.
   1. What is the probability that the next customer will arrive
      1. within the next 3 minutes?
      2. in more than 7 minutes?
      3. between 4 and 8 minutes?
   2. Give the Excel formula (with proper input values) for the probabilities found in part (a).

1. The commute time to work for a particular employee follows a continous uniform distribution with a minimum time of 10 minutes and maximum time of 22 minutes.
   1. Calculuate f(x).
   2. What are the mean and standard deviation for this distribution?
   3. What is the probability that the employee’s next commute to work will require less than 12.5 minutes?
   4. What is the probability that the emplyee’s next commute to work will require more than 14.5 minutes?
   5. What is the probability that the employee’s next commute to work will require between 11 and 20 minutes?
   6. What commute time represents the 40th percentile of this distribution?
2. According to ESPN, the average weight of a National Football League (NFL) player in 2009 is 252.8 pounds. Assume the population standard deviation is 25 pounds. A random sample of 38 NFL players was selected.
   1. Calculate the standard error of the mean.

* 1. What is the probability that the sample mean will be less than 246 pounds?
  2. What is the probability that the sample mean will be more than 249 pounds?
  3. What is the probability that the sample mean will be between 254 and 258 pounds?