HW 6

1) Sincich, Ex. 4.124 b), c), d).
2) Sincich, Ex. 4.136.
3) Sincich, Ex. 4.145.
4) Sincich, Ex. 4.147. Sampling is done here “with replacement” so the same value of x can occur twice in the sample.
5) Sincich, Ex. 4.148.
6) Sincich, Ex. 4.149.
7) Sincich, Ex. 4.160.
8) Sincich, Ex. 4.177.
9) According to a recent survey, 30% of credit card holders pay off their balances in full each month. If a random sample of 400 credit card holders is taken, what is the probability that
   A) At least 110 of them pay off their balances in full each month?
   B) Between 125 and 140 of them pay off their balances in full each month?
10) The daily returns on a portfolio are normally distributed with a mean of 0.001 and a standard deviation of 0.002.
    A) What is the probability that the daily returns on that portfolio are positive for at least 60 out of the next 100 days?
    B) What is the probability that the average return for the portfolio over the next 100 days exceeds 0.0015?
11) After an extensive investigation by the Consumer Product Safety Commission, Honeywell agreed to recall 770,000 potentially defective smoke detectors. The Commission suggested that about 40% of the Honeywell detectors were defective. However, Honeywell found only four defectives in a random sample of 2000 detectors and claimed that the recall was not justified. What is the probability of finding at most 4 defective detectors in a random sample of 2000 if, in fact, 40% of all detectors are defective?
12) Consider the following game: A cup is filled with 100 pennies. The cup is shaken, and the pennies are poured onto a table. If at least 60 of the pennies are Heads, you win $20. Otherwise, you lose $1. Use the normal approximation to the binomial, together with expected value, to decide if this is a good game to play.