

**PROBABILITY THEORY: Homework Set # 9**

This homework will not be collect. But you are responsible to be able to do them. The solutions will be available on May 12th.

Read: Chapter 7, Section 7.4, 7.5, Chapter 8, 8.2, 8.3 **SPECIFICS OF READING ASSIGNMENT:**

Include Tables 7.1 and Table 7.2, Page 366-367, in your cheat sheet and use them to work with common probability distributions.

Examples to read carefully:

Chapter 7: 4c, 4m, 5a

Chapter 8: 2a, 2b, 3b, 3c

(1). Ross, Page 385, 48.

(2). Ross, Page 385, 51.

(3). Ross, Page 427, 2.

(4). Ross, Page 427, 4.

**Bonus Problems, get 1 extra credits for each, get an additional one for doing both**

1. Page 386, 55. (Hint,  $E(\sum_{i=1}^K X_i) = E(E(\sum_{i=1}^K X_i|K = k))$ , where  $K$  is the number of ducks in a flock,  $X_i$ 's are bernoulli trials(not necessarily independent), equals one when the  $i$ th duck is down, equals zero if it survived. Find probability  $P(X_i = 0|K = k)$  first. You do not have to evaluate the final mathematical expression.)

2. Page 386, 56. (Hint,  $E(\sum_{i=1}^N X_i) = E(E(\sum_{i=1}^N X_i|K = k))$ , where  $K$  is the number of people in an elevator car,  $N$  is the number of floors in the building.  $X_i$ 's are bernoulli trials(not necessarily independent), equals one when the car stops at  $i$  floor, equals zero if it does not. Find probability  $P(X_i = 0|K = k)$  first. You do not have to evaluate the final mathematical expression.)