

## Math 302/Stat 302 Problem Set IV

Never due

### Problems from textbook

page 59 # 2.48, 2.49

page 62 # 2.58, 2.62, 2.67, 2.69, 2.72, 2.73, 2.75, 2.78, 2.79

page 72 # 3.1, 3.3, 3.7, 3.10

page 83 # 3.11, 3.12, 3.13, 3.16, 3.19, 3.22

Due February 9

### Problems from textbook

page 95 # 3.23, 3.24, 3.26, 3.27, 3.29, 3.34, 3.36, 3.37, 3.39

page 102 # 3.40

### Other Problems

- I) From a box containing four black balls and two green balls, three balls are drawn in succession, each ball being replaced in the box before the next draw is made. Find the probability distribution for the number of green balls.
- II) Four records are selected at random from a collection consisting of five jazz records, two classical records and three polka records. Let  $X$  be the number of jazz records selected. Find a formula for  $P(X = x)$ .
- III) By investing in a particular stock, someone can make a profit of \$3000, with probability 0.3, or take a loss of \$1000, with probability 0.7. What is the investor's expectation value?
- IV) In a gambling game a man is paid \$2 if he draws a jack or queen and \$5 if he draws a king or ace from an ordinary deck of 52 cards. If he draws any other card, he loses. How much should he pay to play if the game is fair?
- V) Let  $X$  represent the outcome when a balanced die is tossed and let  $Y = 2X^2 - 5$ . Find  $E(Y)$ .
- VI) Suppose that airplane engines operate independently in flight and fail with probability 0.2. Assuming that a plane makes a safe flight if at least half of its engines run, determine whether a four-engine plane or a two-engine plane has the higher probability for a successful flight.
- VII) The probability that a student pilot passes the written test for a private pilot's license is 0.7. Find the probability that a person passes the test
  - a) On the third try.
  - b) Before the fourth try.

**Midterm 1 is on Wednesday, February 2.**