MATH 21-01 (Introductory Statistics), HW4 (100 points). Due: 02/28/2017 in class.

Not from textbook (60 pts)

Please show your work below. You may use R to evaluate factorials, combinations, and permutations.

- (A) A box of 20 computer components consists of 15 good components and 5 faulty components. Suppose 3 components are picked at random. What is the probability that: they will all be good? they will all be faulty? two will be good? at least two will be good?

- (B) A coin is tossed three times. Let the random variable X denote the number of heads. List the sample space of all possible outcomes. Which values can X take? Find the probability distribution of X. Find the expected value and variance of X. (Do not make use of the Binomial distribution results for this problem).

- (C) Let X be a Binomial random variable with parameters 4 and 0.5. What do the parameters represent? What is $E[X]$? What is the probability that X equals its expected value?

From textbook (40 pts)

Section 4-6: 6, 10, 14
Section 5-2: 3, 8, 19