

Homework 8

Do the problems on webwork and turn the following problems in class on Nov. 5th.

Homework should be written neatly and clearly explained. If it requires more than one sheet, the sheets must be stapled. Include your name and id number in the top right corner of your homework.

Problem 1. Two people agree to meet at a given time, but they are both late. the amount of time that they are late is a random variables uniformly distributed between 0 and 10, in minutes. Additionally, the amounts of time they are late are independent.

Compute the probability that the person who arrives first will wait more than two minute for the other.

Problem 2. Consider the following 2-step experiment. In the first stage of the experiment we roll a fair six-sided it until we get a 1, and we remember how many times we had to roll it. Let X be the number of times the die was rolled. In the 2nd stage of the experiment we will toss a fair coin X times. Let Y be the number of heads in the second stage.

- (a) What is the probability mass function of X ?
- (b) What is the conditional probability mass function of Y given X ?
- (c) Use part a) and b) to compute the joint probability mass function of X and Y .
- (d) What is the probbability $Y = 0$?