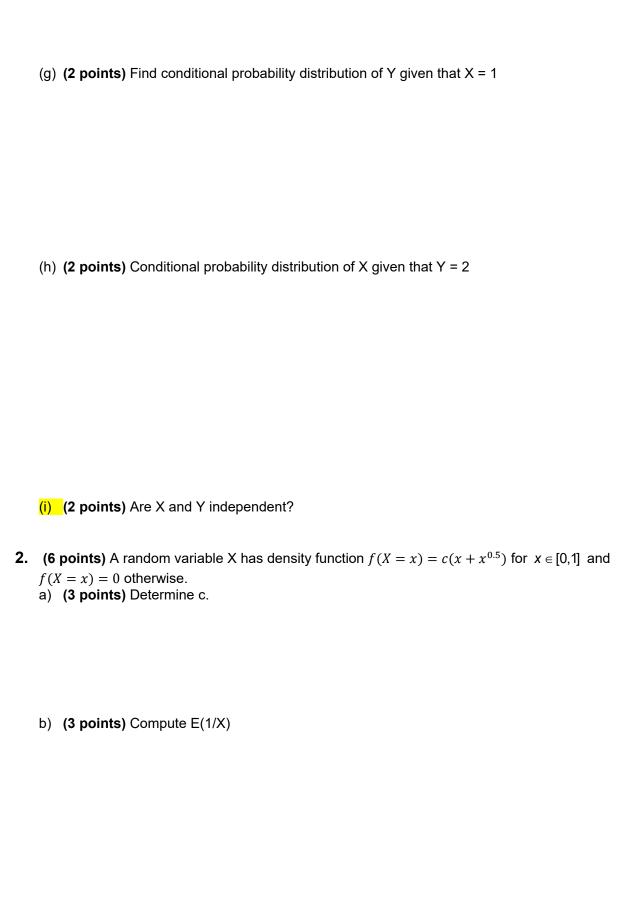
Homework #3

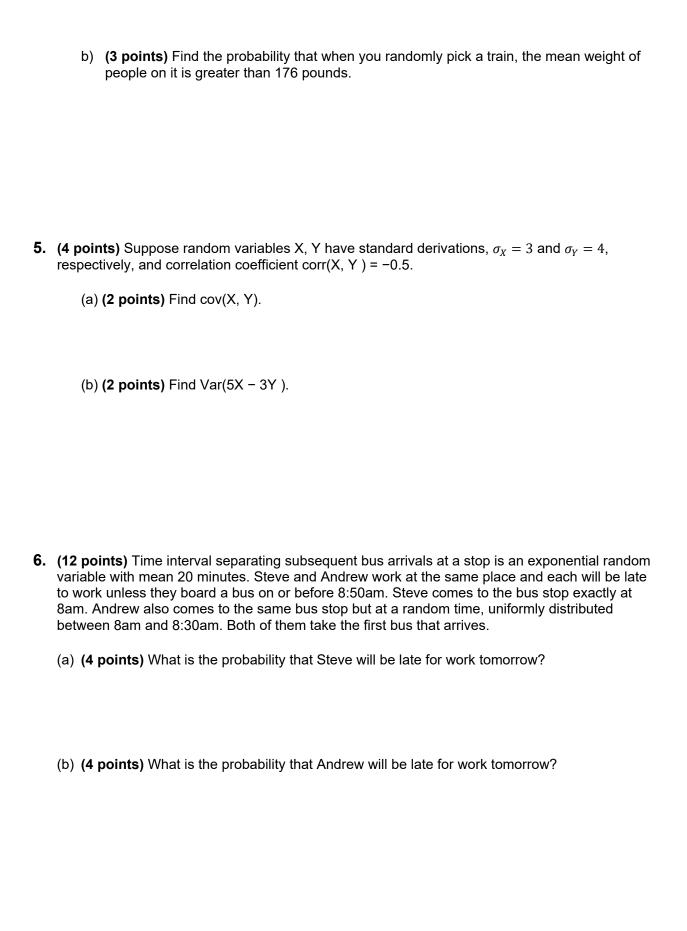
Please present 4 significant figures in your final answers for probabilities. Also, make sure to explain your thought process as if the reader is one of your classmates.

1.	val De	points) The joint probability mass function of discrete random variables X and Y taking ues $x = 1, 2, 3$ and $y = 1, 2, 3$, respectively, is given by a formula $f_{XY}(x, y) = c^*(x + 2^*y)$. termine the following: (2 points) Find c
	b)	(2 points) Find probability of the event where X = 1 and Y < 3
	c)	(2 points) Find marginal probability P _Y (Y = 2)
	d)	(2 points) Marginal probability distribution of the random variable X
	(e)	(2 points) Marginal probability distribution of the random variable Y
	(f)	(4 points) E(X), E(Y), V(X), and V(Y)



3.	(10 points) Toss an unfair coin 4 times. The probability of head is 0.6 and that of tail is 0.4. Let X be the total number of heads among the first two tosses and Y the total number of heads among the last two tosses.
	a) (4 points) Write down the joint probability mass fraction of X and Y.

- b) (2 points) Are X and Y independent? Please explain.
- c) **(4 points)** Compute the conditional probability P(X > Y | Y = 0)
- **4. (7 points)** A train has 200 seats. Suppose that the mean weight of men is 180 pounds with a standard deviation of 20 and the mean weight of women 170 is with a standard deviation of 15. Assume that all the seats in trains are always occupied, there are always 100 men and 100 women on the train and that the weight of different passengers are independent random variables.
 - a) (4 points) Find mean and standard deviation of the mean weight of people on the train.



(c) (4 points) What is the probability that Steve and Andrew will different busses?										