

Practice 1-5

Practice 1

I have 100 items of a product in stock. The probability mass function for the product's demand D is $P(D=90) = P(D=100) = P(D=110) = 1/3$.

- a) find the mass function, mean and variance of the number of items sold.
- b) find the mass function, mean, and variance of the amount of demand that will be unfilled because of lack of stock.

Practice 2

Let X be the following discrete random variable: $P(X=-1) = P(X=0) = P(X=1) = 1/3$. Let $Y = X^2$. Show that $\text{COV}(X, Y) = 0$ but X and Y are not independent random variables.

Practice 3

I draw five cards from a deck replacing each card immediately after it is drawn. I receive four dollars for each heart that is drawn. Find the mean and variance of my total payoff.

Practice 4

Let X be a continuous random variable with density function:

$$f(x) = \frac{4-x}{k}; 0 < x < 4$$

- a) what is k ?
- b) Find the CDF for X
- c) Find $E(X)$ and $\text{Var}(X)$
- d) find $E(X)$ and the variance of X .

Practice 5

Suppose two dice are tossed

- a) what is the probability that the total of the two dice add up to 7 or 11 ?
- b) what is the probability that the total of the two dice will add up to a number other than 2 or 12?
- c) are the events

E1 = first die shows a three and

E2 total of the two dice is six

independent events?

- d) Are the events

E1 first die shows a 3 and

E2 the total of the two dice is seven

independent events?

- e) given that the total of the two dice is five what is the probability that the first die shows a two
- f) given that the first die shows a five what is the probability that the total of the two dice is even?