

No. Chapter 4 C

1 Given the values below:

$$\mu = 2 \quad \sigma^2 = 0.5$$

a) Find the mean of the discrete random variable:

$$Z = 3X - 2$$

b) Find the variance of the discrete random variable above:

2 Given: $Z = 2x + 3$

a) If the mean of $X = 4$, what is the mean of Z ?

b) If the variance of $X = 0.8$ Find σ_z^2

- 3 If you purchase 5 gallons of skim milk for \$2 per gallon and sell it for \$3 per gal and receive a refund for unsold milk of \$1 per gallon

$$y = \text{Profit} = \text{NoSold} (\text{PriceSell} - \text{PriceRefund}) + \text{NoPurchased} * (\text{PriceRefund} - \text{PriceYouPurchaseFor})$$

What is the expected profit or loss for the following distribution of sales?

x	0	1	2	3	4	5
f(x)	0.10	0.20	0.30	0.20	0.10	0.10

4 X = discrete random variable and f(x) is given below:

x	0	1	2
f(x)	0.20	0.50	0.30

a) Find the expected value of X:

b) Find the expected value of: $y = (2x+1)^2$

5 X & Y are independent random variables. Given the following variances

$$\begin{aligned} \sigma_x^2 &= 1 & Z &= 4X+1Y + 1 \\ \sigma_y^2 &= 3 \end{aligned}$$

6 X and Y are NOT independent random variables. Compute the variance of Z:

$$\begin{aligned} \sigma_x^2 &= 1 & Z &= -2X+1Y + 2 \\ \sigma_y^2 &= 2 \\ \sigma_{xy} &= 1 \end{aligned}$$

- 7 Find the covariance of the continuous random variables X and Y having the joint probability function:

$$f(x,y) = \begin{cases} x+y & 0 < x < 1 \quad 0 < y < 1 \\ 0 & \text{elsewhere} \end{cases}$$

1 b) 2.3

2 a) 11.0

2 b) 3.2

3

-\$0.40

4 1.10

4 12.2

5 19

6 2

7 -0.007