Stats\_problemset5 (Bhavik Kollipara)

## QUESTION 1

### a.)

* mu=120,sigma=20
* P(115<X<135)
* z score for 115= (115-120)/20= -5/20= -0.25
* z score for 135= (135-120)/20= 15/20 =0.75
* P(135)-P(115)=

p=pnorm(135,120,20)-pnorm(115,120,20)  
p

## [1] 0.372079

### b.)

* P(x>=1)
* P(BPM>160)=1-P(BPM<160)

p=1-pnorm(160,120,20)  
p

## [1] 0.02275013

* P(X>=1)=1-P(NONE HAS >=160)

p=1-pbinom(0,10,0.02275013)  
p

## [1] 0.2055689

### c.)

* Y=X1+X2
* E(Y)=E(X1)+E(X2)= 120+120= 240
* VAR[Y]=VAR[X1]+VAR[X2]= 400+400
* P(Y>320)=1-P(Y<=320)

p= 1-pnorm(320,240,sqrt(800))  
p

## [1] 0.002338867

## QUESTION 2

### a.)

* X1+X2
* E(X1)+E(X2)= 1+3=4
* VAR[X1]+VAR[X2]=9+16=25

### b.)

* -x2=-3
* var[-x2]=16

### c.)

* X1-X2
* E(X1)-E(X2)=1-3=-2
* VAR[X1]-VAR[X2]=9+16=25

### d.)

* 2X1
* 2*E(X1)=2*1=2
* 2*VAR[X1]= 4*9= 36

### e.)

* 2X1=2X2
* 2E(X1)-2E(X2)= -4
* 4VAR[X1]+4VAR[X2]=4[9+16]=100

## QUESTION 3

### a.)

* P(X<=5)=

1-exp(-0.1\*5)

## [1] 0.3934693

### b.)

* P(4<=X<=8)=

1-exp(-0.8)-(1-exp(-0.4))

## [1] 0.2209911

### c.)

* E(X)=1/Lamda= 1/0.1= 10

### d.)

* P\*(P)

0.393 \* 0.393

## [1] 0.154449

## QUESTION 4

### a.)

* q2/30= 0.5

q2= 0.5\*30  
q2

## [1] 15

b.) \* IQR=Q3-Q1

IQR= 25-7.5  
IQR

## [1] 17.5

c.) \* E(X)= 16.6 WHICH IS GREATER THAN q2. so, Its skewed to right.

## QUESTION 5

### a.)

q2= sqrt(2)  
q2

## [1] 1.414214

### b.)

IQR=2-2/sqrt(3)  
IQR

## [1] 0.8452995

### c.)

* E(X)=2 WHICH IS GREATER THAN THAN q2=1.414. so it’s skewed to right.

## QUESTION 6

### a.)

* q2=0.5
* y^2-2\*y+1=0.5
* y= 1.707106

### b.)

IQR= 1.866-1.5  
IQR

## [1] 0.366