BT307 LAB 4

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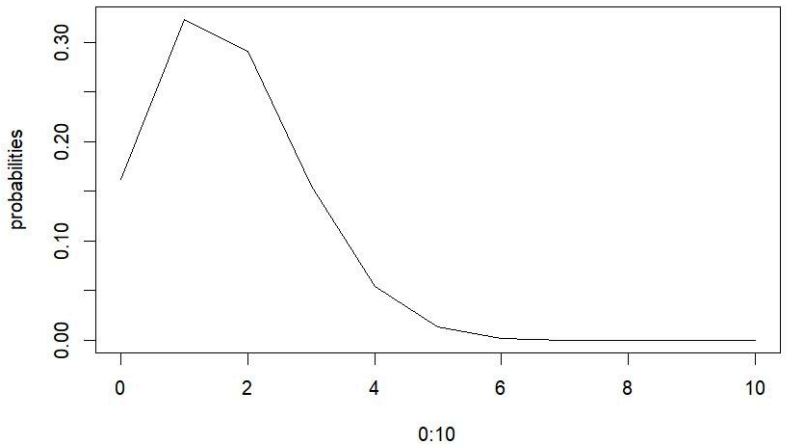
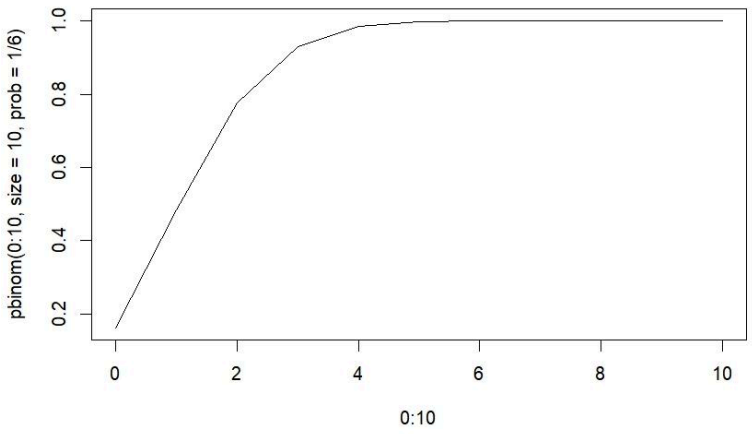
Roll No.: 210106004

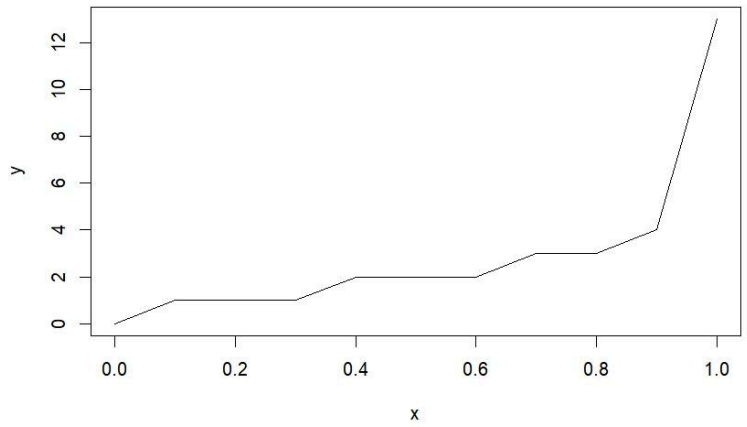
1)



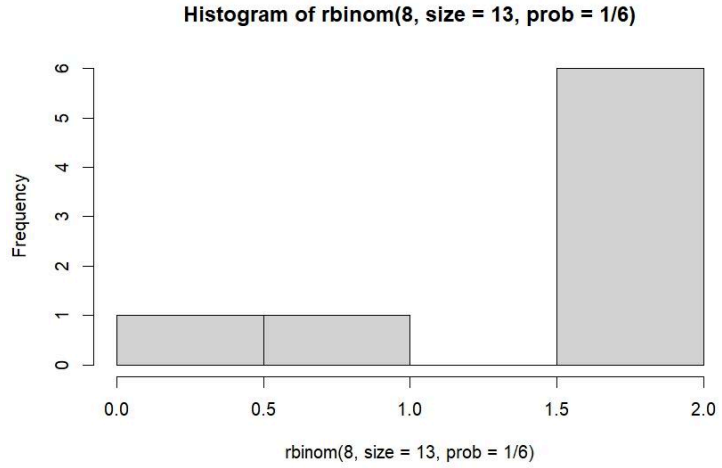
2)



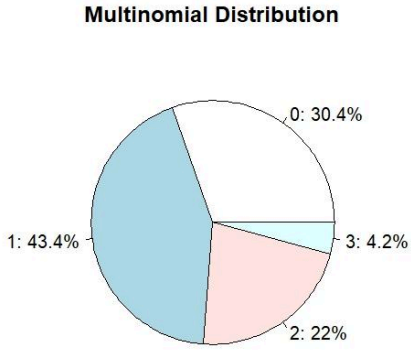
3)


y
x
0
2
4
6
8
10
12
0.0
0.2
0.4
0.6
0.8
1.0

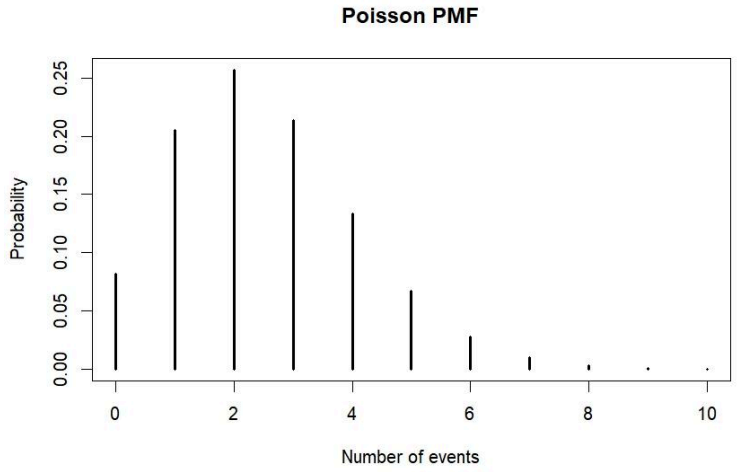
4)


Histogram of rbinom(8, size = 13, prob = 1/6)
Frequency
rbinom(8, size = 13, prob = 1/6)
0
1
2
3
4
5
6
0.0
0.5
1.0
1.5
2.0

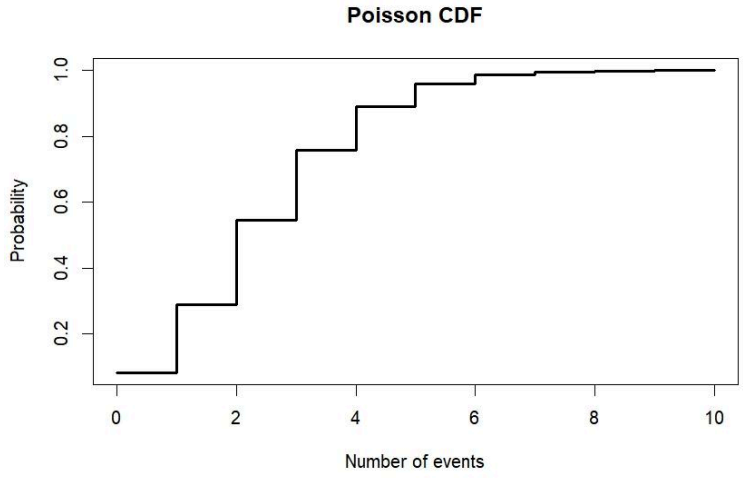
5)


Multinomial Distribution
0: 30.4%
1: 43.4%
2: 22%
3: 4.2%

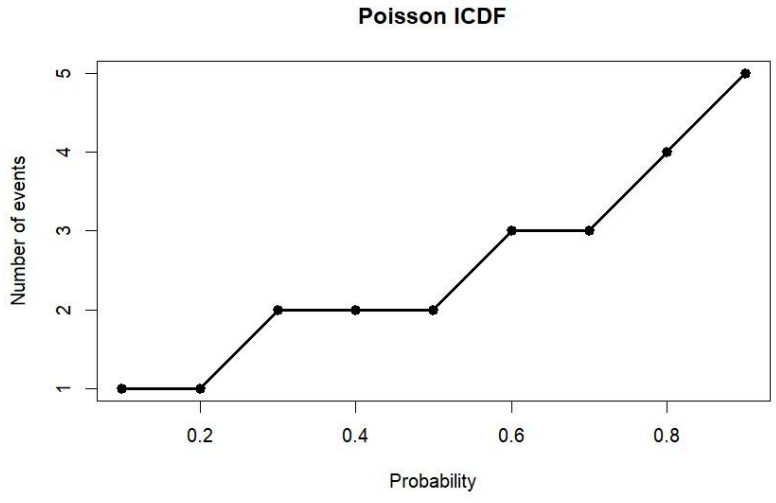
6)


Poisson PMF
Probability
0.00
0.05
0.10
0.15
0.20
0.25
0
2
4
6
8
10
Number of events

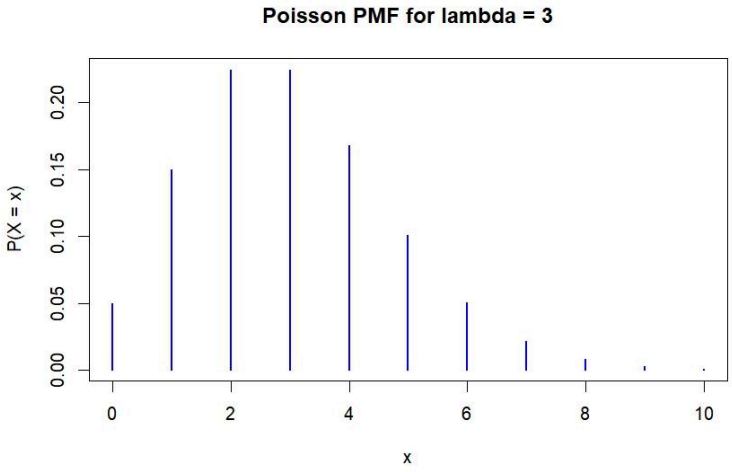
7)


Poisson CDF
Probability
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
Number of events

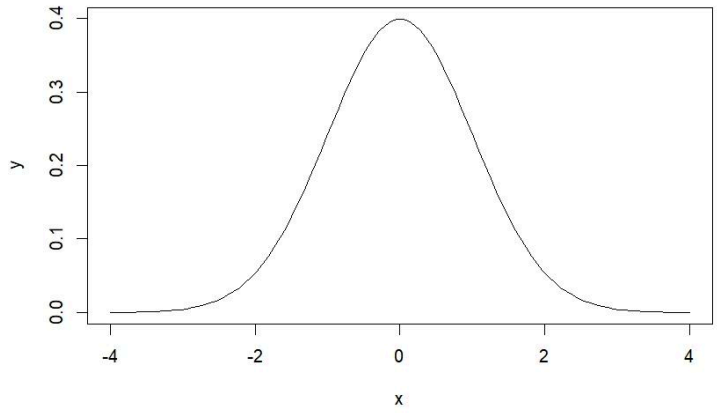
8)


Poisson ICDF
Number of events
1
2
3
4
5
0.2
0.4
0.6
0.8
Probability

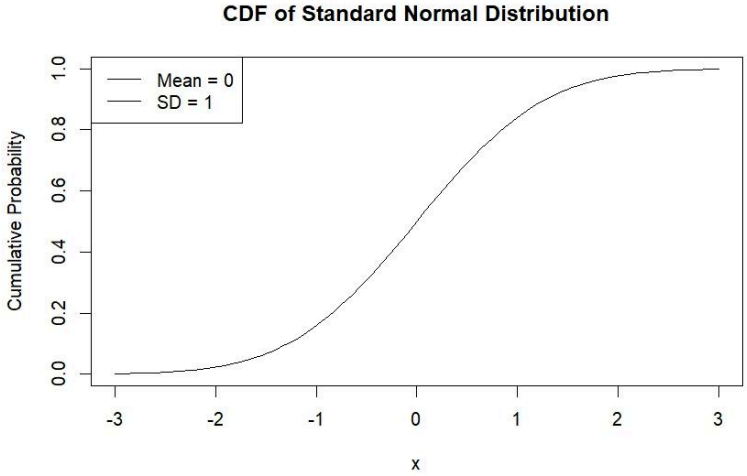
9)


Poisson PMF for lambda = 3
P(X = x)
0.00
0.05
0.10
0.15
0.20
0
2
4
6
8
10
x

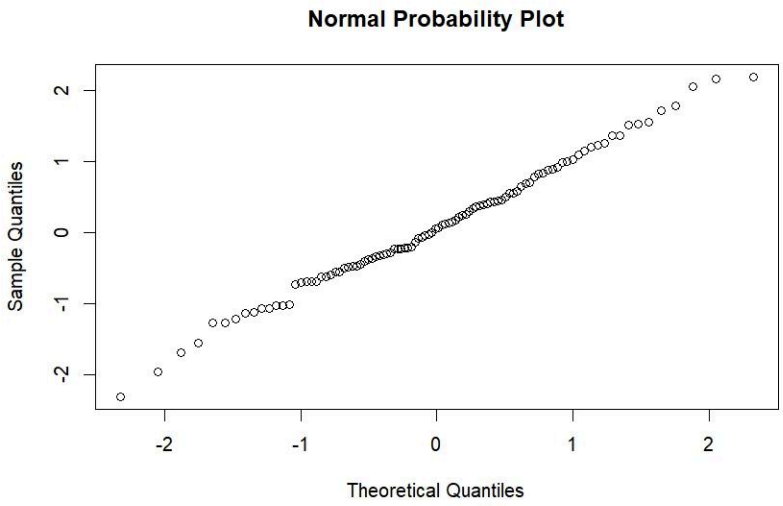
10)


y
0.0
0.1
0.2
0.3
0.4
-4
-2
0
2
4
x

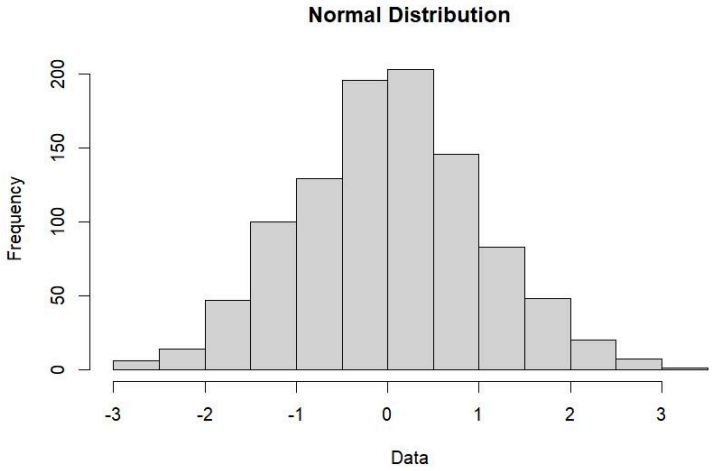
11)


CDF of Standard Normal Distribution
Mean = 0
SD = 1
Cumulative Probability
0.0
0.2
0.4
0.6
0.8
1.0
-3
-2
-1
0
1
2
3
x

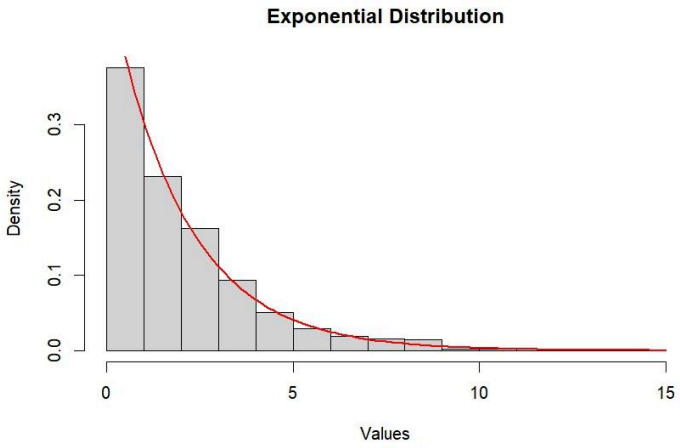
12)



13)



14)

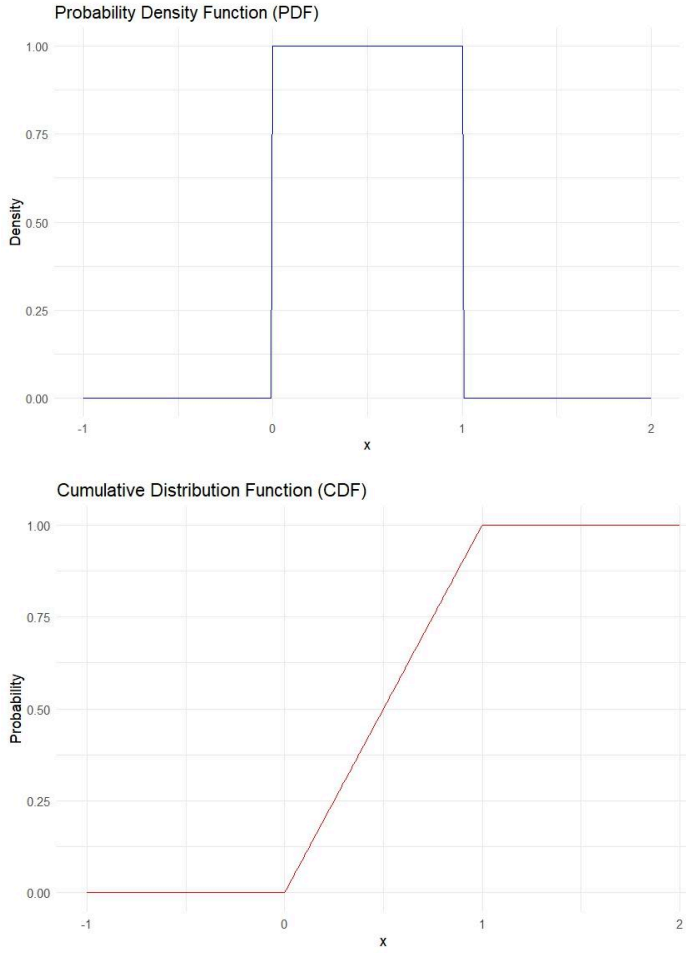


15)

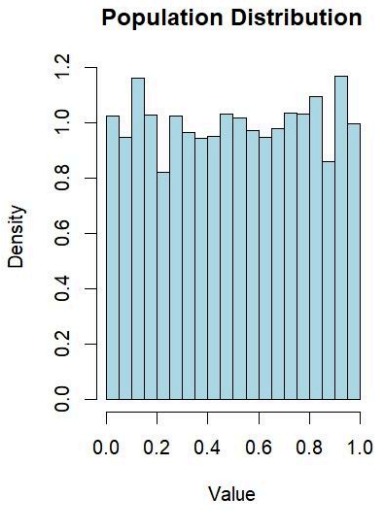
```
> random_numbers <- runif(10, min = 0, max = 1)
> print(random_numbers)
 [1] 0.61174841 0.55881274 0.03996714 0.74528195 0.20648742 0.65649597
0.52241467 0.63343658
```

```
 [9] 0.61756313 0.28489555
> pdf <- dunif(seq(-1, 2, by = 0.1), min = 0, max = 1)
> print(pdf)
 [1] 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0
> cdf <- punif(seq(-1, 2, by = 0.1), min = 0, max = 1)
> print(cdf)
 [1] 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7
0.8 0.9 1.0 1.0
[23] 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
> quantiles <- qunif(seq(0, 1, by = 0.1), min = 0, max = 1)
> print(quantiles)
 [1] 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
```

16)



G)




```
> print('Sample Mean and Variance')
[1] "Sample Mean and Variance"
> print(x_bar)
[1] 0.5010222
> print(std**2)
[1] 0.002745131
> mu <- mean(population)
> sigma <- sd(population)
> print('Population Mean and Variance')
[1] "Population Mean and Variance"
> print(mu)
[1] 0.5031668
> print((sigma**2)/sample_size)
[1] 0.002823829
```