

IT24104248

Rathnayaka R.D.M.N.



Faculty of Computing

Year 2 Semester 1 (2025)

IT2120 - Probability and Statistics

Lab Sheet 07

Q1

```
2
3 #Question 01
4
5 #Random variable x follows a uniform distribution with a=0 and b=40
6
7 #Probability that the train arrives between 8:10 a.m. and 8:25 a.m :
8 punif(25,min = 0, max = 40, lower.tail = TRUE) -punif(10,min = 0, max = 40, lower.tail = TRUE)
9
10 #Question 02
11
12 #Random variable x has exponential distribution with lambda=0.34
13
14 #Probability that an update will take at most 2 hours :
15 pexp(2,rate = 0.334,lower.tail = TRUE)
16
17 #Question 03
18
19 #Random variable x has normal distribution with mean=100 and standard deviation=15
20
21 #i.Probability that a randomly selected person has an IQ above 130 :
22 1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)
23
24 #ii.IQ score represents the 95th percentile :
25 qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
26
27
28
```

```
3:1 (Top Level) R Script
Console Terminal Jobs
R 4.5.1 · C:/Users/Yeshan Gimnada/Downloads/
>
> #Probability that the train arrives between 8:10 a.m. and 8:25 a.m :
> punif(25,min = 0, max = 40, lower.tail = TRUE) -punif(10,min = 0, max = 40, lower.tail = TRUE)
[1] 0.375
> #Question 01
>
> #Random variable x follows a uniform distribution with a=0 and b=40
>
> #Probability that the train arrives between 8:10 a.m. and 8:25 a.m :
> punif(25,min = 0, max = 40, lower.tail = TRUE) -punif(10,min = 0, max = 40, lower.tail = TRUE)
[1] 0.375
```

Q2

```

9      pnorm(12,mean = 0, lmbda = 15, lower.tail = TRUE), pnorm(12,mean = 0, lmbda = 15, lower.tail = TRUE),
10
11 #Question 02
12 #Random variable x has exponential distribution with lambda=0.34
13
14 #Probability that an update will take at most 2 hours :
15 pexp(2,rate = 0.334,lower.tail = TRUE)
16
17 #Question 03
18
19 #Random variable x has normal distribution with mean=100 and standard deviation=15
20
21 #i.Probability that a randomly selected person has an IQ above 130 :
22 1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)
23
24 #ii.IQ score represents the 95th percentile :
25 qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
26
27
28

```

16:1 (Top Level) R Script

Console Terminal Jobs

R 4.5.1 - C:/Users/Yeshan Ginnada/Downloads/

```

> #Question 02
>
> #Random variable x has exponential distribution with lambda=0.34
>
> #Probability that an update will take at most 2 hours :
> pexp(2,rate = 0.334,lower.tail = TRUE)
[1] 0.487267

```

Q3

```

17 #Question 03
18
19 #Random variable x has normal distribution with mean=100 and standard deviation=15
20
21 #i.Probability that a randomly selected person has an IQ above 130 :
22 1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)
23
24 #ii.IQ score represents the 95th percentile :
25 qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
26
27
28

```

17:1 (Top Level) R Script

Console Terminal Jobs

R 4.5.1 - C:/Users/Yeshan Ginnada/Downloads/

```

> #Question 03
>
> #Random variable x has normal distribution with mean=100 and standard deviation=15
>
> #i.Probability that a randomly selected person has an IQ above 130 :
> 1-pnorm(130,mean = 100, sd=15, lower.tail = TRUE)
[1] 0.02275013
>
> #ii.IQ score represents the 95th percentile :
> qnorm(0.95,mean = 100, sd=15,lower.tail = TRUE)
[1] 124.6728

```