Flipped Assignment 16

Group 5

2022/4/12

Input Data

```
setwd('C:/Users/Saunak/OneDrive - Texas Tech University/Work/TTU/Coursework/Spring 2022/Stat Data Analys
dat <- read.csv("C:/Users/Saunak/OneDrive - Texas Tech University/Work/TTU/Coursework/Spring 2022/Stat D
head(dat)
```

```
##            x
## 1 2.48465207
## 2 1.49390524
## 3 1.02541872
## 4 0.64174611
## 5 0.25274364
## 6 0.09842084
```

```
str(dat)
```

```
## 'data.frame':    50 obs. of  1 variable:
##  $ x: num  2.485 1.494 1.025 0.642 0.253 ...
```

Part a.

Based on my observations, I'm consideriing the 3rd, 14th and 17th data points as my three reasonable guesses. The λ values for the same should be 0.975211, 0.820714 and 0.728721.

```
lambda = c(0.975211, 0.820714,0.728721)
x1 <- dat[1:25,1]
exp(sum(log(dexp(x1,lambda[1]))))
```

```
## [1] 6.276049e-12
```

```
exp(sum(log(dexp(x1,lambda[2]))))
```

```
## [1] 4.534806e-12
```

```
exp(sum(log(dexp(x1,lambda[3]))))
```

```
## [1] 2.493538e-12
```

Based on the results, the 1st λ value i.e. 0.975211 is most likely considering the first 25 data points since it has the highest likelihood value out of the three i.e. 6.276049e-12.

Part b.

```
lambda = c(0.975211, 0.820714,0.728721)
x <- dat[1:50,1]
exp(sum(log(dexp(x,lambda[1]))))
```

```
## [1] 7.671485e-25
```

```
exp(sum(log(dexp(x,lambda[2]))))
```

```
## [1] 7.474941e-25
```

```
exp(sum(log(dexp(x,lambda[3]))))
```

```
## [1] 3.276991e-25
```

Based on the results, the 1st λ value i.e. 0.975211 is again most likely considering all 50 data points since it has the highest likelihood value out of the three i.e 7.671485e-25.

Part c.

Yes, my guesses at λ were same for both the 25 and 50 data point guesses and I found that the most likely λ for both the cases were same i.e. 0.975211.