**Assignment 2 Template**

**LAST NAME:**

**FIRST NAME:**

**USERID:**

**UWaterloo ID:**

**Problem 1: Fill in the information below based on your Binomial observation which was generated using your ID number as the random seed.**

**theta = y =**

**The maximum likelihood of theta is thetahat =**

**Insert the plot of the Binomial relative likelihood function here.**

**Based on the graph of the relative likelihood function and the line y = 0.15 the 15% likelihood interval for theta is:**

**Using the R function uniroot the 15% likelihood interval is:**

**(NOTE: To find the endpoints of the likelihood interval using**

uniroot(function(x) BinRLF(x)-0.15,lower=0.1,upper=0.15)

**you will need to change** “lower=0.1,upper=0.15” **to values that work for your data.)**

**Is theta = 0.2 a plausible value of theta for your data set? Why?**

**Is theta = 0.8 a plausible value of theta for your data set? Why?**

**Problem 2: The first three numbers in your Exponential data set are:**

|  |  |  |
| --- | --- | --- |
|  |  |  |

**theta =**

**The maximum likelihood of theta is thetahat =**

**Insert the plot of the Exponential relative likelihood function here.**

**Based on the graph of the relative likelihood function and the line y = 0.15 the 15% likelihood interval for theta is:**

**Using the R function uniroot the 15% likelihood interval is:**

**(NOTE: To find the endpoints of the likelihood interval using**

uniroot(function(x) ExpRLF(x)-0.15,lower=2.8,upper=3)

**you will need to change** “lower=2.8,upper=3” **to values that work for your data.)**

**Is theta = 2 a plausible value of theta for your data set? Why?**

**Is theta = 8 a plausible value of theta for your data set? Why?**

**If Y is a new observation from this Exponential distribution then the maximum likelihood estimate of P(Y = 0) is:**

**Problem 3:**

**population mean =**

**population standard deviation =**

**Insert the histogram of the population here.**

**Insert the plot of the (approximate) sampling distribution of the sample mean here.**

**What factor(s) affect the location of the sampling distribution of the sample mean?**

**What factor(s) affect the spread of the sampling distribution of the sample mean?**

**What factor(s) affect the shape of the sampling distribution of the sample mean?**