Assignment 2 Example

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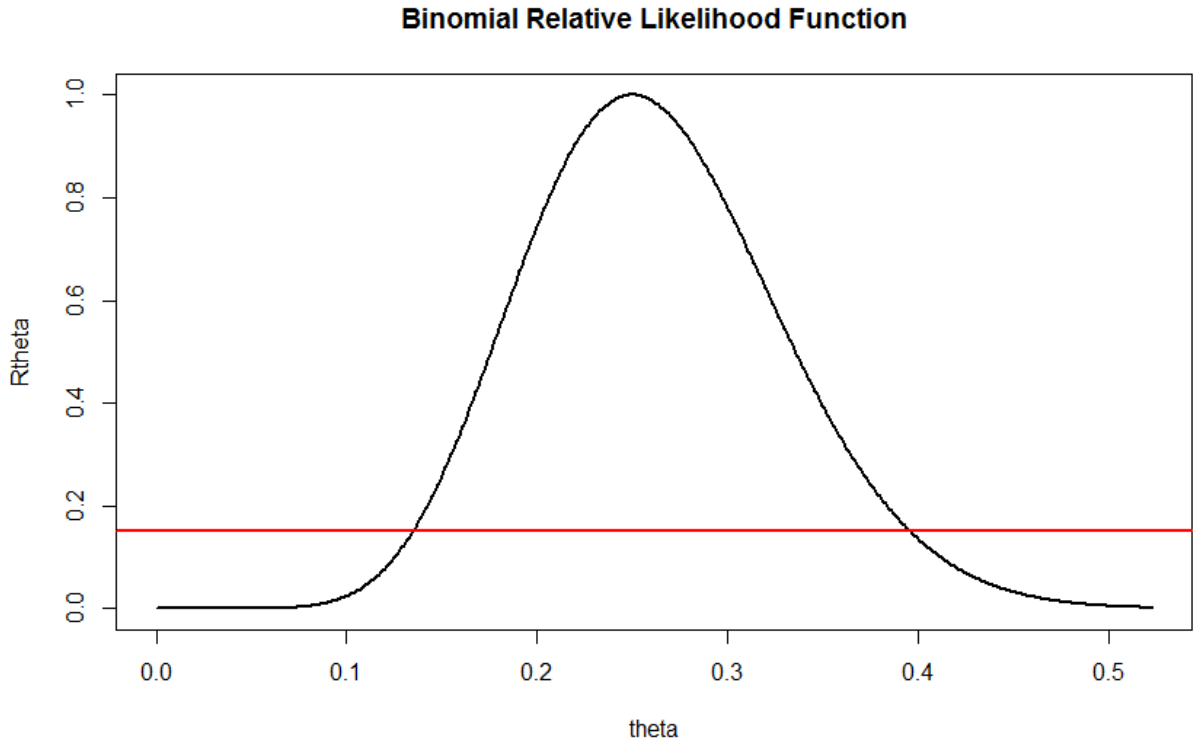
<u>Problem 1:</u> Fill in the information below based on your Binomial observation which was generated using your ID number as the seed for the random number generator.

theta = 0.2666948 y = 10.0000000

The maximum likelihood of theta is thetahat = 0.25



Based on the graph of the relative likelihood function and the line y = 0.15 the 15% likelihood interval for theta is: [0.13,0.40]

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

[0.1346055, 0.3960402].

Theta = 0.2 is a (very) plausible/implausible value of theta since ….

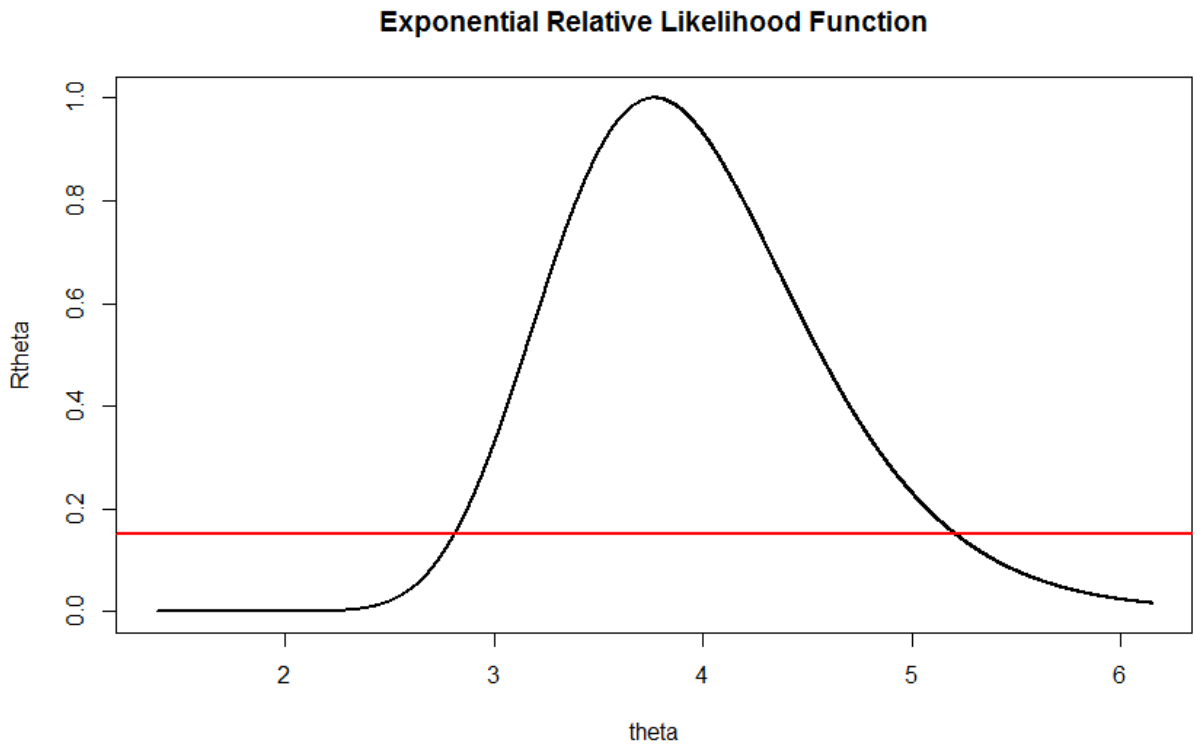
Theta = 0.8 is a (very) plausible/implausible value of theta since ….

<u>Problem 2:</u> The first three numbers in your Exponential data set are:

0.02241854	**0.19706745**	**0.26119882**

theta = 3.990256

The maximum likelihood of theta is thetahat = 3.767605



Based on the graph of the relative likelihood function and the line y = 0.15 the 15% likelihood interval for theta is: [2.8,5.2].

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

[2.810856, 5.212614].

Theta = 2 is a (very) plausible/implausible value of theta since …

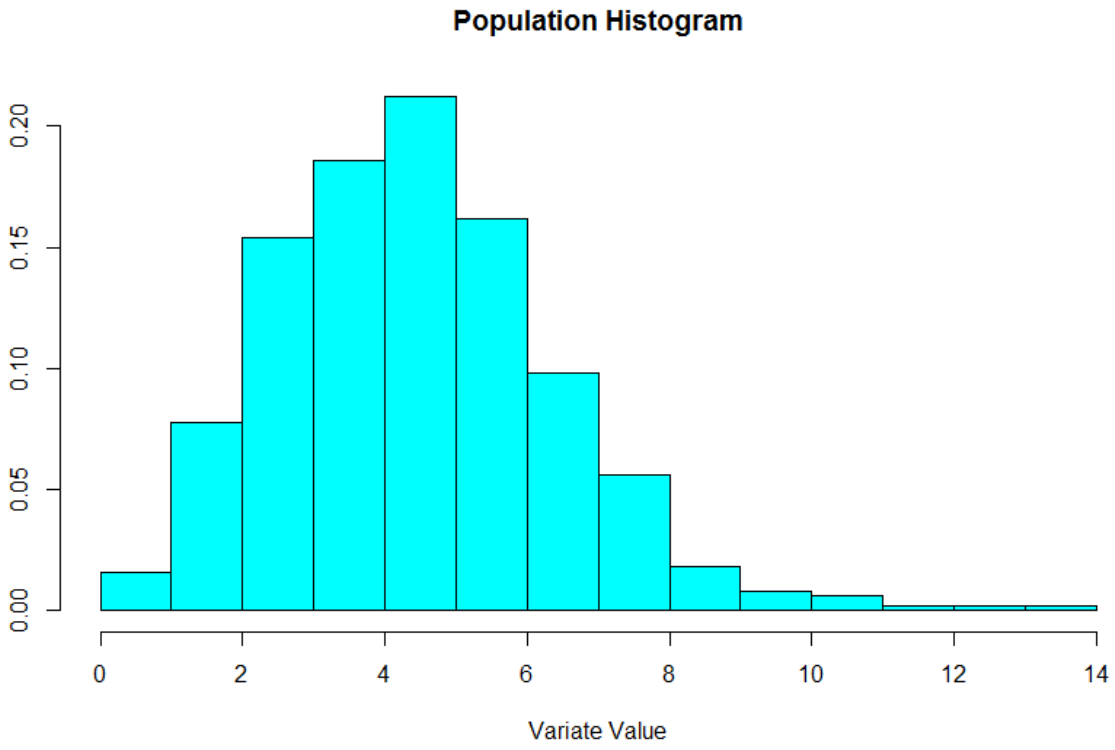
Theta = 8 is a (very) plausible/implausible value of theta since …

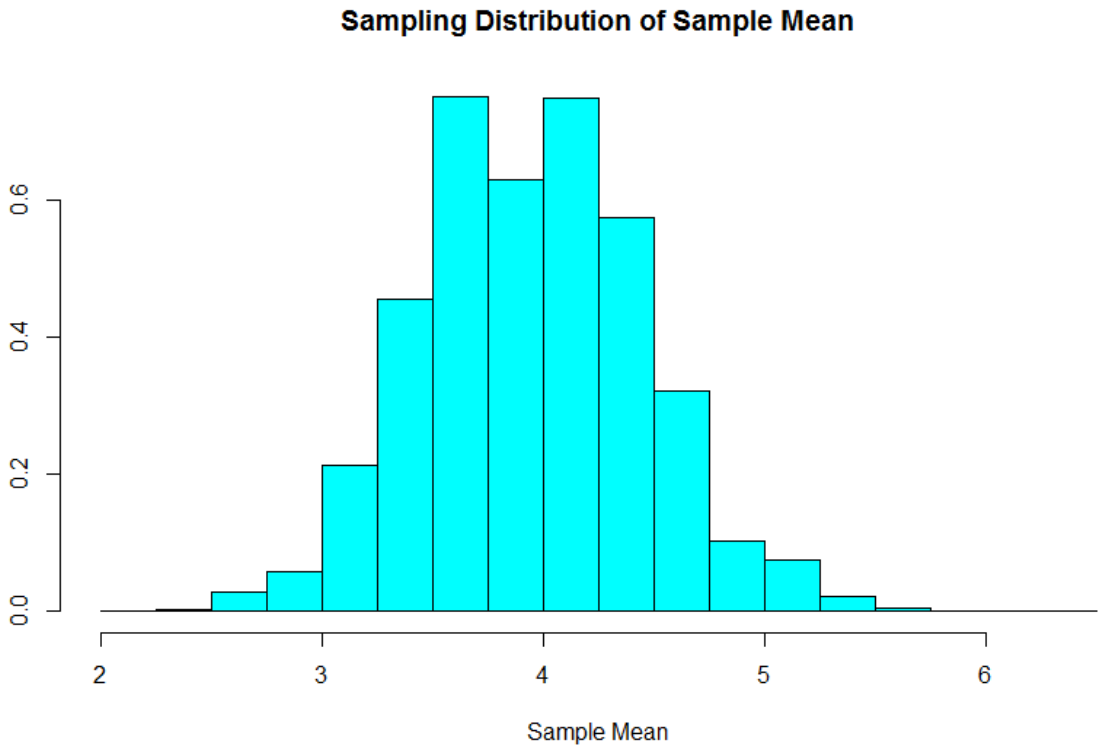
If Y is a new observation from this Exponential distribution then the maximum likelihood estimate of P(Y >1) is …..

Problem 3:

population mean = 3.93

population standard deviation = 1.976133





The factor(s) that affect the location of the sampling distribution of the sample mean are ….

The factor(s) that affect the spread of the sampling distribution of the sample mean are ….

The factor(s) that affect the shape of the sampling distribution of the sample mean are ….