**Assignment 3 Template**

**LAST NAME:**

**FIRST NAME:**

**USERID:**

**UWaterloo ID:**

**Problem 1: Fill in the information below based on your data which were generated using your ID number as the seed for the random number generator.**

**n = 30 theta =**

**The first 10 approximate 95% confidence intervals are:**

**Do all 10 intervals contain only values between 0 and 1? YES/NO**

**Depending on the value of theta is it possible that some intervals will not contain only values between 0 and 1? Why or why not?**

**The proportion of approximate 95% confidence intervals which contain the true value of theta =**

**How close is this proportion to 0.95? What are the reasons for this?**

**The first ten 15% likelihood intervals (approximate 95% likelihood intervals) are:**

**Do all 10 likelihood intervals contain only values between 0 and 1? YES/NO**

**Depending on the value of theta is it possible that some likelihood intervals will not contain only values between 0 and 1? Why or why not?**

**The proportion of 15% likelihood intervals which contain the true value of theta =**

**How close is this proportion to 0.95? What are the reasons for this?**

**Insert the plot of the sampling distribution of the likelihood ratio statistic for n=30 here.**

**For Binomial data the likelihood ratio statistic is a discrete or continuous random variable?**

**How well does the Chi-squared(1) probability density function agree with the sampling distribution of the likelihood ratio statistic as approximated by the relative frequency histogram?**

**n = 100 theta =**

**The first 10 approximate 95% confidence intervals are:**

**The proportion of approximate 95% confidence intervals which contain the true value of theta =**

**How close is this proportion to 0.95? What are the reasons for this?**

**The first ten 15% likelihood intervals (approximate 95% likelihood intervals) are:**

**The proportion of 15% likelihood intervals which contain the true value of theta =**

**How close is this proportion to 0.95? What are the reasons for this?**

**Insert the plot of the sampling distribution of the likelihood ratio statistic for n=100 here.**

**How well does the Chi-squared(1) probability density function agree with the sampling distribution of the likelihood ratio statistic as approximated by the relative frequency histogram?**

**Compare the graphs for n=30 and n=100.**

**Problem 2: Fill in the information below based on your data which were generated using your ID number as the seed for the random number generator.**

**n = 20 theta =**

**The first 10 approximate 95% confidence intervals are:**

**Do all 10 intervals contain only values greater than 0? YES/NO**

**Depending on the value of theta is it possible that some intervals will not contain only values greater than 0? Why or why not?**

**The proportion of approximate 95% confidence intervals which contain the true value of theta =**

**How close is this proportion to 0.95? What are the reasons for this?**

**The first ten 15% likelihood intervals (approximate 95% likelihood intervals) are:**

**Do all your 10 intervals only contain values greater than 0? YES/NO**

**Depending on the value of theta is it possible that some likelihood intervals will not contain only values greater than 0? Why or why not?**

**The proportion of 15% likelihood intervals which contain the true value of theta =**

**How close is this proportion to 0.95? What are the reasons for this?**

**Insert the plot of the sampling distribution of the likelihood ratio statistic for n=20 here.**

**For Exponential data the likelihood ratio statistic is a discrete or continuous random variable?**

**How well does the Chi-squared(1) probability density function agree with the sampling distribution of the likelihood ratio statistic as approximate by the relative frequency histogram?**

**Problem 3: Fill in the information below based on your data which were generated using your ID number as the seed for the random number generator.**

**mu =**

**sigma =**

**The first ten 95% confidence intervals for mu are:**

**The proportion of 95% confidence intervals which contain the true value of mu =**

**How close is this proportion to 0.95? What are the reasons for this?**

**The first ten 95% confidence intervals for sigma are:**

**The proportion of 95% confidence intervals which contain the true value of sigma =**

**How close is this proportion to 0.95? What are the reasons for this?**