Due: 11:20am, September 5, 2019

- 1. Consider the Exponential (1) distribution.
 - (a) Generate 100 trials of 5, 50, 5000 samples respectively.
 - (b) In each case compute the sample mean for each of the 100 trials.
 - (c) Decide if the overall mean in each case is close to the true mean.
 - (d) Verify that there is significant reduction in variance from 5 to 50 to 5000.
- 2. For each of the distributions: Beta(10,2) and Beta(10,10)
 - (a) Generate 100 trials of 5, 50, 500 samples respectively.
 - (b) Using the data decide if the conclusion of the Central Limit Theorem applies in each of the three cases, 5, 50, 500.
- 3. Consider the Poisson(1) distribution.
 - (a) Generate 100 trials of 500 samples respectively.
 - (b) Find the 95%-confidence interval for the mean in each trial.
 - (c) Compute the number of trials in which the true mean lies in the interval.
- 4. The dataset BangaloreRain.csv in the shared Datasets dropbox folder contains 100 year monthly rainfall data for Bangalore.
 - (a) Decide if any month's 100 year rainfail is Normally distributed.
 - (b) Calculate the yearly total rain fall for each of the 100 years.
 - (c) Plot the histogram and Decide if the distribution is Normal.
 - (d) Find a 95% confidence interval for the expected annual rainfall in Bangalore.