R

Q1 [Central Limit theorem]

1. Create a vector of length 50000 (call X) by drawing 50000 samples from an exponential distribution with LAMBDA = 0.2. Create a scatter plot (point) for the samples (X).
2. Partition the values into 500 vectors (call Y_1, Y_2 …. Y_{500}) containing 100 element each.
3. Plot cumulative distribution function (CDF) and probability density function (PDF) for first five (5) vectors (i.e., Y_1, Y_2… Y_5). Also calculate the mean and standard deviation for each of the groups (all Y_i's) and print the values for first five.
4. Treat means for each partition (Y_i's) as a random variable (call it Z) to plot graphs for frequency, cumulative distribution function (CDF) and probability density function (PDF) (see class example).
5. Calculate and output the mean and standard deviation of the distribution of sample means (Z).
6. Verify that the mean and standard deviation of the distribution of sample mean values to be close to the original distribution.

Submission format

Your submission should be a single rollno.r file.