% Brian Powell 012362894

% EE381 - Chaw-Long Chu

%

% Homework\_6

%

% Get average of 2000 sampling of a) any 2000-number sampling from % exponential distribution and plot the histogram of these 2000 numbers % against normal distribution. Repeat the same calculation by b) 5-number % sampling, and c) 30-number sampling. Also, d) find the mean (u) and % standard $ deviation (o) of the population.

%

clc

clear

% static variables;

p = 2000;

theta = 5;

n2 = 2;

n5 = 5;

n30 = 30;

% array functions for y average

yav2 = (p);

yav5 = (p);

yav30 = (p);

for i=1:p

y2 = exppdf(rand(1,n2), theta);

y5 = exppdf(rand(1,n5), theta);

y30 = exppdf(rand(1,n30), theta);

yav2(i) = sum(y2)/n2;

yav5(i) = sum(y5)/n5;

yav30(i) =sum(y30)/n30;

end

% mean2 = mean5 = mean30 = the mean of population (u)

% std2 \* sqrt(2) = std5 \* sqrt(5) = std30 \* sqrt(30) = standard deviation

% of population (o)

mean2 = mean(yav2);

mean5 = mean(yav5);

mean30 = mean(yav30);

std2 = std(yav2);

std5 = std(yav5);

std30 = std(yav30);

variance2 = std2 \* sqrt(2);

variance5 = std5 \* sqrt(5);

variance30 = std30 \* sqrt(30);

% mean2 = 0.1813

% mean5 = 0.1814

% mean30 = 0.1813

% std2 = 0.0074 standard deviation of population is 0.0074 \* sqrt(2) = 0.010465

% std5 = 0.0046 standard deviation of population is 0.0046 \* sqrt(5) = 0.10286

% std30 = 0.0019 standard deviation of population is 0.0019 \* sqrt(30) = 0.10406

figure(1);

histfit(yav2);

title('N = 2');

figure(2);

histfit(yav5);

title('N = 5');

figure(3);

histfit(yav30);

title('N = 30');





