Joe Sinotte

clear

clc

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%%%%%%%%%%%%%%%%%%%%%%%%%%%%% Question 1 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

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y = .5;

for i = 1:500

x = exprnd(1/3,1,i);

n = length(x);

z(i) = exp(-((y-x(i)).^2)/2);

Z(i) = (1/n)\*sum(z);

X(i) = x(i).\*exp(-((y-x(i)).^2)/2);

R(i) = (1/n)\*sum(X);

theta1(i) = R/Z;

end

figure(1)

plot(theta1)

xlabel('Sample Size')

ylabel('Estimator')

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%%%%%%%%%%%%%%%%%%%%%%%%%%%% Question 2 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

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n = 500;

for a = 1:5

x = randn(1,n)+a;

theta2(a) = (1/n)\*sum((x>a).\*exp(a^2/2-a\*x));

end

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%%%%%%%%%%%%%%%%%%%%%%%%%%% Question 3 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

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for i = 1:500

x = randn(1,i);

n = length(x);

z(i) = exp(-abs(x(i)).^(3/4))/((1/sqrt(2\*pi))\*exp(-(x(i)^2)/2));

Z(i) = (1/n)\*sum(z);

y(i) = x(i)\*exp(-abs(x(i)).^(3/4))/((1/sqrt(2\*pi))\*exp(-(x(i)^2)/2));

Y(i) = (1/n)\*sum(y);

theta3(i) = Y(i)./Z(i);

sig2(i) = (1/n)\*sum((x(i)-theta3(i)).^2);

end

figure(3)

plot(theta3)

xlabel('Sample Size')

ylabel('Estimator')

figure(4)

plot(sig2)

xlabel('Sample Size')

ylabel('Estimator')

QUESTION 1:



QUESTION 2:

theta2 =

0.1626 0.0212 0.0013 0.0000 0.0000

QUESTION 3:

