Joe Sinotte

clear

clc

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

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

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

x(1) = 100;

x0 = x(1);

m = ((2^13)-1);

a = 17;

for i = 2:500

x(i) = mod(a\*x0,m);

u1(i) = x(i)/m;

x0 = x(i);

end

figure(1)

hist(u1)

xlabel('Variable')

ylabel('Frequency')

for i = 1:499

c1(i) = corrcoef(u1(i),u1(i+1));

v1 = [u1(i),u1(i+1)];

end

figure(2)

plot(v1)

xlabel('ui')

ylabel('ui+1')

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

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

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

y(1) = 100;

y0 = y(1);

b = 85;

for j = 2:500

y(j) = mod(b\*y0,m);

u2(j) = y(j)/m;

y0 = y(j);

end

figure(3)

hist(u2)

xlabel('Variable')

ylabel('Frequency')

for j = 1:499

c2 = corrcoef(u2(j),u2(j+1));

v2 = [u2(j),u2(j+1)];

end

figure(4)

plot(v2)

xlabel('ui')

ylabel('ui+1')

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

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

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

U = rand(1,1000);

alpha = 1;

beta = .5;

x = ((-log(1-U))/alpha).^(1/beta);

figure(5)

plot(x)

figure(6)

hist(x)

xlabel('Variable')

ylabel('Frequency')

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

%%%%%%%%%%%%%%%%%%%%%%%%%%%% Question 4 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

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

for j = 1:3000

N = 200;

U4 = rand(1,N);

x4 = -log(U4);

%figure(8)

%hist(x4)

Z = zeros(1,200);

Z(1) = 1;

for i = 2:N

if (x4(i) >= max(x4(1:i-1)))

Z(i) = 1;

else

Z(i) = 0;

end

end

Y(j) = sum(Z);

end

figure(9)

hist(Y)

xlabel('Variable')

ylabel('Frequency')

M = mean(Y)

lambda = 1/(k+1)

for i = 1:N

P(i) = exp(-lambda)\*(lambda^(i)/(factorial(i)))

end

figure(10)

plot(P)

lambda = 1/(k+1);

i = 0;

p = exp(-lambda);

F = p;

while i<maxiter

if U<F

X = i;

end

p = p\*lambda/(i+1);

F = F+p;

i = i+1;

end

QUESTION 1:





QUESTION 2:





QUESTION 3:



QUESTION 4:

