DISCRETE TIME FOURIER TRANSFORM

PROGRAM:

%part a

figure(1);

w=(0:1:100)\*(pi/100)

H=exp(1i.\*w)./(exp(1i.\*w)-0.8)

subplot(2,1,1)

plot(w,abs(H))

grid on

xlabel('Frequency')

ylabel('|H|')

title('Magnitude Response')

subplot(2,1,2)

plot(w,angle(H))

grid on

xlabel('Frequency')

ylabel('Phase')

title('Phase Response')

%part b

figure(2);

n=0:1:100

w=0.05\*pi

%H=exp(i\*w)/(exp(i\*w)-0.8)

a=[1 -0.8]

b=1

x=1\*cos(w.\*n)

[y]=filter(b,a,x)

subplot(2,1,1)

stem(x)

grid on

xlabel('n')

ylabel('x(n)')

title('Input Sequence')

%y=4.09\*cos(0.05\*pi\*(n-3.42))

subplot(2,1,2)

stem(y)

grid on

xlabel('n')

ylabel('x(n)')

title('Output Sequence')