





**Code: DTFTofhalfpowernuofn.m**

w=(-6\*pi):(pi/100):(6\*pi);

x=1./(1-(0.5\*exp(-i\*w)));

plot(w,x);

grid on;

figure;

plot(w,abs(x));

grid on;

figure;

plot(w,angle(x));

**DFTofNpointSequence.m**



clc;

clear all;

close all;

% input sequence x

x=input(' Type in a N point sequence which is a power of 2 ');

N=length(x);

% DFT of x

X=fft(x,N);

% Magnitude of DFT

magX=abs(X);

% Phase angle of DFT

phaX=angle(X);

% To plot magnitude and Phase angle

n=0:N-1;

subplot(3,1,1);

stem(n,x);

title(' Time domain sequence ');

xlabel(' Time index n ');

ylabel(' Magnitude ');

subplot(3,1,2);

k=0:N-1;

stem(k,magX);

title(' Magnitude of the DFT samples ');

xlabel(' Frequency index k ');

ylabel(' Magnitude ');

subplot(3,1,3);

stem(k,phaX);

title(' Phase of DFT samples ');

xlabel(' Frequency index k ');

ylabel(' Phase(radians) ');

% To display on the command window

disp(' Input sequence ');

disp(x);

disp(' DFT of the sequence ');

disp(X);

% To obtain the time domain sequence

x1 = ifft(X,N);

disp(x1) % x1 must be equal

command window output

Type in a N point sequence which is a power of 2 [2 4 6 8]

Input sequence

2 4 6 8

DFT of the sequence

20.0000 + 0.0000i -4.0000 + 4.0000i -4.0000 + 0.0000i -4.0000 - 4.0000i

2 4 6 8

>>

DFTex1.m

x(t) = cos(2 \* pi \* 2 \* t) f=2

x[n Ts] = cos(2 \* pi \*2\* n \*Ts)

x[n] = cos(2pi \* 2 \*(1/8) \*n) f=2 fs=8Hz Ts=1/fs

x[n] =cos((pi/2)\*n)

code

n = 0:7;

x = cos(0.5\*pi\*n);

y=fft(x,8);

stem(y);

