

Experiment No-4

Even and odd parts of signal and sequence & Real and imaginary parts of Signal

```
clc
close all;
clear all;
%Even and odd parts of a signal
t=0:.001:4*pi;
x=sin(t)+cos(t);
subplot(2,2,1)
plot(t,x)
xlabel('t');
ylabel('amplitude')
title('input signal')
y=sin(-t)+cos(-t);
subplot(2,2,2)
plot(t,y)
xlabel('t');
ylabel('amplitude')
title('input signal with t= -t')
even=(x+y)/2;
subplot(2,2,3)
plot(t,even)
xlabel('t')
ylabel('amplitude')
title('even part of the signal')
odd=(x-y)/2;
subplot(2,2,4)
plot(t,odd)
xlabel('t');
ylabel('amplitude');
title('odd part of the signal');
% Even and odd parts of a sequence
x1=[0,2,-3,5,-2,-1,6];
n=-3:3;
y1= fliplr(x1);
figure;
subplot(2,2,1);
stem(n,x1);
xlabel('n');
ylabel('amplitude');
title('input sequence');
subplot(2,2,2);
stem(n,y1);
xlabel('n');
ylabel('amplitude');
title('input sequence with n= -n');
even1=.5*(x1+y1);
odd1=.5*(x1-y1);
% plotting even and odd parts of the sequence
subplot(2,2,3);
stem(n,even1);
xlabel('n');
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ylabel('amplitude');
title('even part of sequence');
subplot(2,2,4);
stem(n,odd1);
xlabel('n');
ylabel('amplitude');
title('odd part of sequence');
% plotting real and imaginary parts of the signal
x2=sin(t)+j*cos(t);
figure;
subplot(3,1,1);
plot(t,x2);
xlabel('t');
ylabel('amplitude');
title('input signal');
subplot(3,1,2);
plot(t,real(x2));
xlabel('time');
ylabel('amplitude');
title('real part of signal');
subplot(3,1,3);
plot(t,imag(x2));
xlabel('time');
ylabel('amplitude');
title('imaginary part of signal');

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