
```

% Joseph Palicke
% Lab 4 Task 1
% 9/26/16

clc; clear all; close all;
echo on;
ts=0.001; % sample period
fs=1/ts;
t=[0:ts:1]; %time variable
x=5*cos(2*pi*1*t); % signal with one frequency
figure
plot(t,x);
ylabel('5cos(2*pi*1*t)');
xlabel('t in seconds');
pwr=sum(x.*x)/(length(t)-1) %average power in signal
xd=fft(x);%discrete transform
pwrFD=sum(xd.*xd).*(ts./(length(t)-1))
echo off
N = length(t);
K = (-(N-1)/2:(N-1)/2);
df = (1./(N.*ts));
f = K.*df;
pFD=fftshift(xd.*xd).*(ts./(length(t)-1));
stem(f,abs(pFD));
xlim([-20 20]);
xlabel('frequency');
ylabel('Pavg');

ts=0.001; % sample period
fs=1/ts;
t=[0:ts:1]; %time variable
x=5*cos(2*pi*1*t); % signal with one frequency
figure
plot(t,x);
ylabel('5cos(2*pi*1*t)');
xlabel('t in seconds');
pwr=sum(x.*x)/(length(t)-1) %average power in signal

pwr =

    12.5250

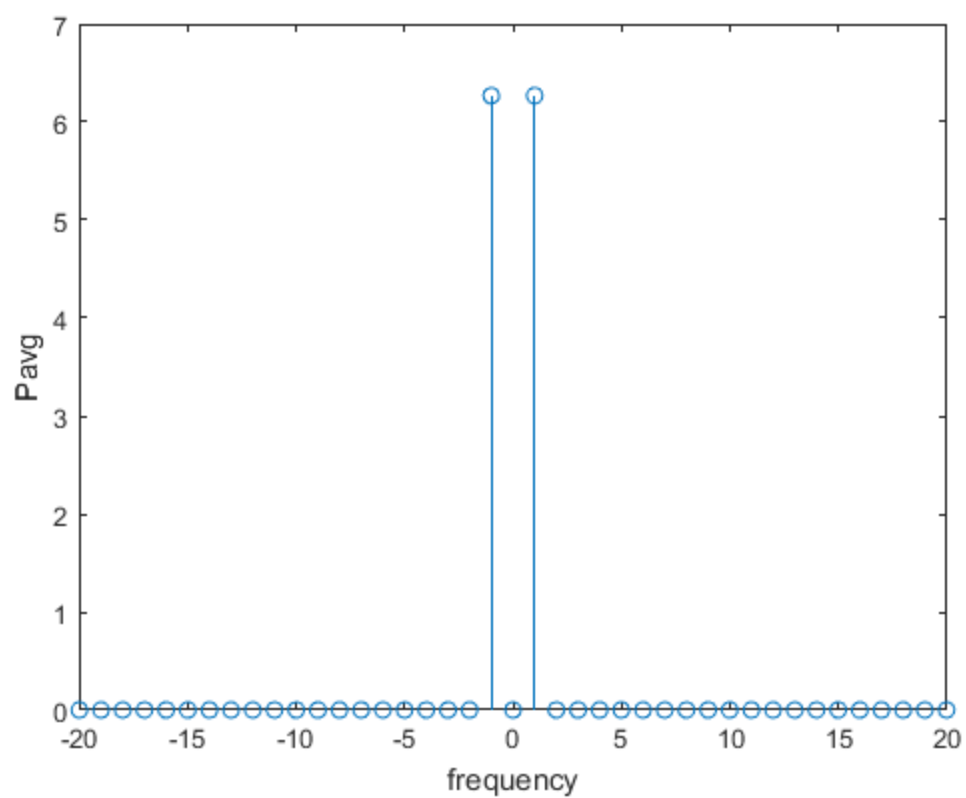
xd=fft(x);%discrete transform
pwrFD=sum(xd.*xd).*(ts./(length(t)-1))

pwrFD =

    12.5373

echo off

```



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