**a)  
i)**  
clc;

close all;

clear all;

n=0:63;

x=2\*sin(2\*pi\*(5/16)\*n)+5\*sin(2\*pi\*(3/16)\*n);

L=length(x)

N=64;

X=zeros(1,N)

for k=0:1:N-1

for m=0:1:L-1

X(k+1)= X(k+1)+x(m+1)\*exp(-i\*2\*pi\*k\*m/N)

end

end

K=0:1:N-1;

Y=(K/N);

figure

subplot(311)

stem(Y,abs(X));

legend('Y,abs(X)')

axis tight

subplot(312)

stem(K,X)

legend('x(k) vs k')

axis tight

  
  
  
  
  
  
 **ii)**  
  
clc

close all;

clear all;

n=0:63;

x=2\*sin(2\*pi\*(5/16)\*n)+5\*sin(2\*pi\*(3/16)\*n);

L=length(x)

N=128;

x=[x zeros(1,N-L)]

A=dftmtx(N)

X=x\*A

K=0:1:N-1;

Y=(K/N);

subplot(311)

stem(Y,abs(X));

legend('Y,abs(X)')

axis tight

subplot(312)

stem(K,X)

legend('x(k) vs k')

axis tight

  
  
  
 **(iii)**clc

close all;

clear all;

n=0:63;

x=2\*sin(2\*pi\*(5/16)\*n)+5\*sin(2\*pi\*(3/16)\*n);

L=length(x)

N=64;

Y=fft(x,N)

stem(n,abs(Y));

axis tight

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