Q.1:

clc;

clear all;

close all;

n=-10:10;

a=0.1+0.3i;

x=exp(a.\*n);

a=abs(x);

b=real(x);

c=imag(x);

d=angle(x);

subplot(221);

stem(n,a);

title('abs');

xlabel('<--time-->');

ylabel('<--amp-->');

subplot(222);

stem(n,b);

title('real');

xlabel('<--time-->');

ylabel('<--amp-->');

subplot(223);

stem(n,c);

title('imag');

xlabel('<--time-->');

ylabel('<--amp-->');

subplot(224);

stem(n,d);

title('angle');

xlabel('<--time-->');

ylabel('<--amp-->');

Q.2:

clc;

clear all;

close all;

n=-5:5;

x=ones(1,length(n));

[y,n]=convo(x,n,x,n);

stem(n,y);

xlabel('<-time->');

ylabel('<-amp->');

title('<-2->');

Q.3:

function [y,n] =convo(x,nx,h,nh)

n=(nx(1)+nh(1)):nx(length(nx))+nh(length(nh));

for i=1:length(n);

[h1,nh1]=sigfold(h,nh);

[h2,nh2]=sigshift(h1,nh1,n(i));

[y1,n1]=sigmul(x,nx,h2,nh2);

y(i)=sum(y1);

end

Q.4:

clc;

clear all;

close all;

x=[3,11,7,0,-1,4,2];

nx=-3:3;

h=[2,3,0,-5,2,1];

nh=-1:4;

[y,n]=convo(x,nx,h,nh);

stem(n,y);

xlabel('<-time->');

ylabel('<-amp->');

title('<-4->');

Q.5:

clc;

clear all;

close all;

x=[3,11,7,0,-1,4,2];

n=-3:3;

[y1,n1]=sigshift(x,n,2);

w=randn(1,length(n));

[y2,n2]=sigadd(y1,n1,w,n);

[y3,n3]=sigfold(y2,n2);

[y4,n4]=convo(x,n,y3,n3);

stem(n4,y4);

xlabel('<-time->');

ylabel('<-amp->');

title('<-5->');

Q.5.a:

clc;

clear all;

close all;

x=[3,11,7,0,-1,4,2];

n=-3:3;

[y1,n1]=sigshift(x,n,2);

w=randn(1,length(n));

[y2,n2]=sigadd(y1,n1,w,n);

[x3,n3]=sigfold(x,n);

[y4,n4]=convo(x3,n3,y2,n2);

stem(n4,y4);

xlabel('<-time->');

ylabel('<-amp->');

title('<-5a->');

Q.5.b:

clc;

clear all;

close all;

x=[3,11,7,0,-1,4,2];

n=-3:3;

[y1,n1]=sigshift(x,n,2);

w=randn(1,length(n));

[y2,n2]=sigadd(y1,n1,w,n);

[x3,n3]=sigfold(x,n);

[y4,n4]=convo(x3,n3,y2,n2);

[y5,n5]=sigfold(y4,n4);

stem(n5,y5);

xlabel('<-time->');

ylabel('<-amp->');

title('<-5b->');

Q.8:

clc;

clear all;

close all;

x=[1,4,1,3];

n=-2:1;

[x1,n1]=sigfold(x,n)

[y2,n2]=convo(x,n,x1,n1);

stem(n2,y2);

xlabel('<-time->');

ylabel('<-amp->');

title('<-8->')

Q.9.a:

clc

clear all;

close all;

n=-20:100;

a=[1,-1,0.9];

b=[1];

h=impz(b,a,n);

stem(n,h);

xlabel('<-time->');

ylabel('<-amp->');

title('<-9a->');

Q.9.b:

clc

clear all;

close all;

n=-20:100;

a=[1,-1,0.9];

b=[1];

h=impz(b,a,n);

[x,n]=impseq(0,-20,100);

h=filter(b,a,x);

stem(n,h);

xlabel('<-time->');

ylabel('<-amp->');

title('<-9b->');

Q.9.c:

clc

clear all;

close all;

n=-20:100;

a=[1,-1,0.9];

b=[1];

h=impz(b,a,n);

[x,n]=stepseq(0,-20,100);

y=filter(b,a,x);

stem(n,y);

xlabel('<-time->');

ylabel('<-amp->');

title('<-9c->');