```
clc
clear
b=[1 0]
a=[1 -0.9]
w=-4*pi:0.1:4*pi
subplot(3,1,1)
zplane(b,a)
xlabel('real part')
ylabel('imaginary part')
title('poles and zeros 102115042')
x=freqz(b,a,w)
mg=abs(x)
ph=angle(x)
subplot(3,1,2)
plot(w/pi,mg)
title('Magnitude 102115042')
xlabel('w')
ylabel('magnitude')
subplot(3,1,3)
plot(w/pi,ph)
title('Phase 102115042')
xlabel('w')
ylabel('phase')
```

```
clc
t = -2:0.001:2;
p = (t>=-0.5) - (t>=0.5);
subplot(3,1,1)

plot(t,p)
xlabel('t')
ylabel('x(t)')
legend('Darpan-102115042')
title('Rectangular pulse')
w = -12*pi:0.1:12*pi;
for i = 1:length(w)
   m(i) = trapz(t,p.*exp( -1i*w(i).*t));
end
subplot(3,1,2)
plot(w,abs(m))
title('CTFT Output Signal')
legend('Darpan-102115042')

subplot(3,1,3)
plot( w , angle(m))
xlabel('Frequency ( rad/s)');
ylabel('Phase')
legend('Darpan-102115042')
```

smexp11.m

```
clc
clear all
x=[1 2 3 4 5 6]
N=length(x)
Q=zeros(1,N)
for k=1:N
    for n=1:N
    Q(k)=Q(k)+x(n).*exp(j*2*pi*(n-1)*(k-1)/N)
    end
end

subplot(2,2,1)
stem(x)
subplot(2,2,2)
stem(Q)
Z=fft(x)
subplot(2,2,3)
stem(Z)
a=angle(Q)
subplot(2,2,4)
stem(a)
```

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WAP to find z transform of an expression.

```
clc
clear all
syms n z
x = ((0.5)^n) + ((2)^n);
xz = ztrans(x,n,z)
y = simplify(xz)

b = [ 2  -5/2  0 ]
a = [ 1, -5/2  1 ]
zplane(b,a)
xlabel('Re(z)-->')
ylabel('Im(z)-->')
grid
title('ROC is |z|')
legend('1021150 30')
```

Cond ?

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WAP to determine DTFT

```
clc
clear all
t = -6 : 0.1 : 6 ;
f = (t >= -3) - (t >= 3)
subplot (2,2,1)
stem (t, f)
title (' Input signal' )
w = -10*pi : 0.1 : 10*pi ]
for i = 1 : length(w)
    m(i) = trapz (t, f.* exp(-1i * w(i).* t))
end
subplot (2, 2, 2)
stem (w, m);
x label ('t')
y label ('x(jw)')
title ('DTFT output signal')
subplot (2,2,3)
plot (w, abs(m));
x label (' Frequency rad/s')
y label (' magnitude')
subplot (2, 2, 4)
plot (w, angle(m));
x label (' Frequency rad/s');
y label ('Phase');
```

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