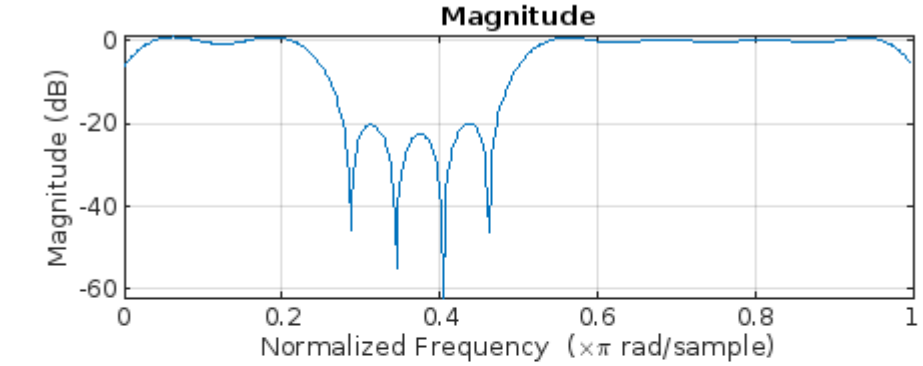
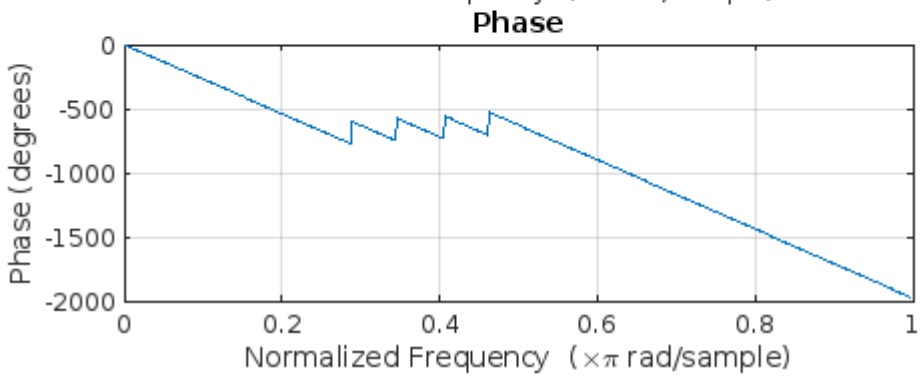
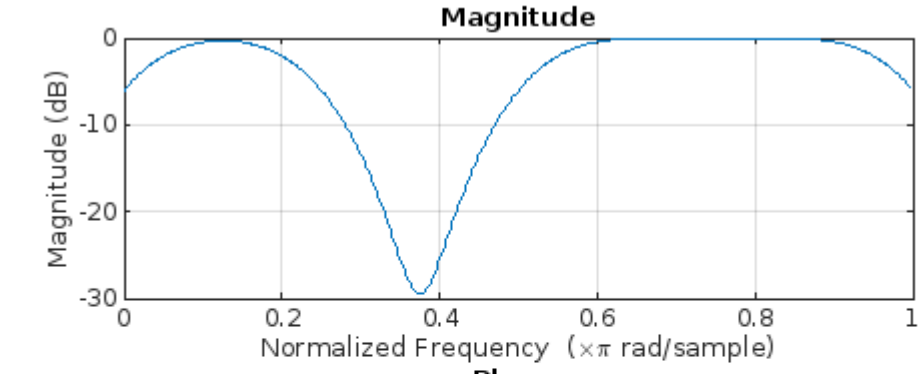
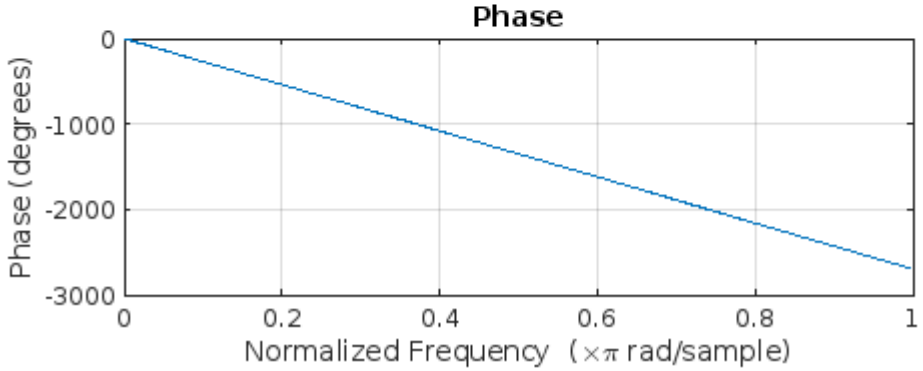
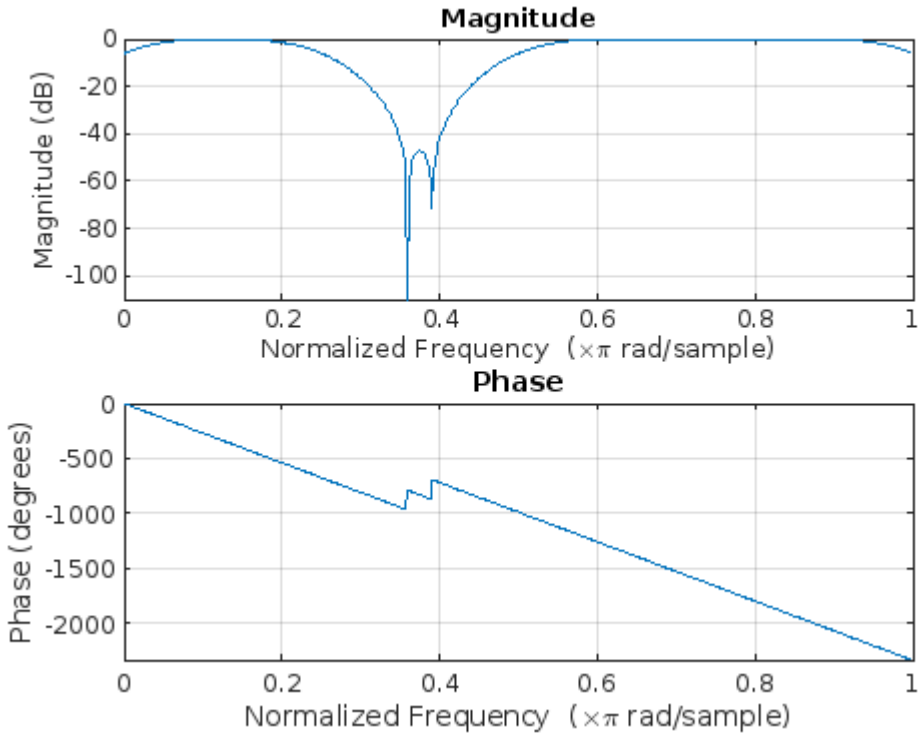
```
clc;
clear all;
close all;

% rect
wc=pi/2;
M=31;

for n=0:M
    w=1;
    r=@(w) exp(-1i*w*(n-(M-1)/2));
    %Q=integral(r,-pi/4,-pi/2);
    q1 = integral(r,-pi/4,0);
    q2 = integral(r,-pi,-pi/2);
    Q = q1+q2;
    y(n+1)=(1/(2*pi))*Q;
    h(n+1)=y(n+1).*w;
end
figure;
freqz(h);

% hamming
for n=0:M
    w2=0.42-0.5*cos(2*pi*n/(M-1))+0.08*cos(4*pi*n/(M-1));
    r=@(w) exp(-1i*w*(n-(M-1)/2));
    %Q=integral(r,-pi/4,-pi/2);
    q1 = integral(r,-pi/4,0);
    q2 = integral(r,-pi,-pi/2);
    Q = q1+q2;
    y(n+1)=(1/(2*pi))*Q;
    h2(n+1)=y(n+1).*w2;
end
figure;
freqz(h2);

% blackman
for n=0:M
    w3=0.54-0.46*cos(2*pi*n/(M-1));
     r=@(w) exp(-1i*w*(n-(M-1)/2));
     %Q=integral(r,-pi/4,-pi/2);
    q1 = integral(r,-pi/4,0);
    q2 = integral(r,-pi,-pi/2);
    Q = q1+q2;
     y(n+1)=(1/(2*pi))*Q;
    h3(n+1)=y(n+1).*w3;
end
figure;
freqz(h3);
```


Magnitude
Magnitude (dB)
0
-20
-40
-60
0
0.2
0.4
0.6
0.8
1
Normalized Frequency (×π rad/sample)


Phase
Phase (degrees)
0
-500
-1000
-1500
-2000
0
0.2
0.4
0.6
0.8
1
Normalized Frequency (×π rad/sample)


Magnitude
Magnitude (dB)
0
-10
-20
-30
0
0.2
0.4
0.6
0.8
1
Normalized Frequency (×π rad/sample)


Phase
Phase (degrees)
0
-1000
-2000
-3000
0
0.2
0.4
0.6
0.8
1
Normalized Frequency (×π rad/sample)



Published with MATLAB® R2023b