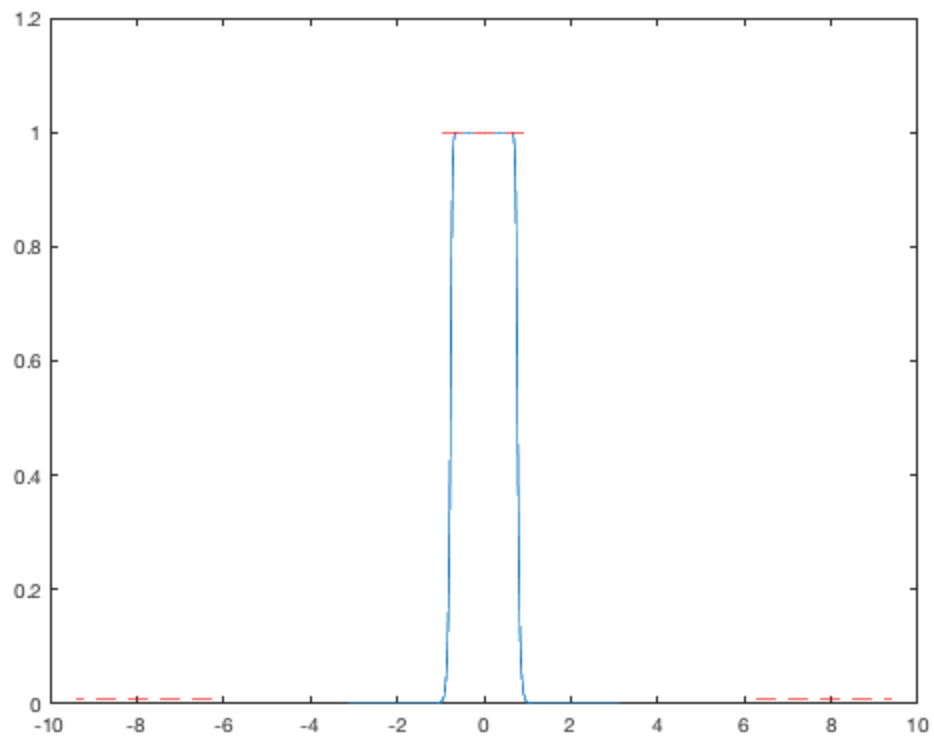

Lab 6 Jesse Layman SID: 861135479

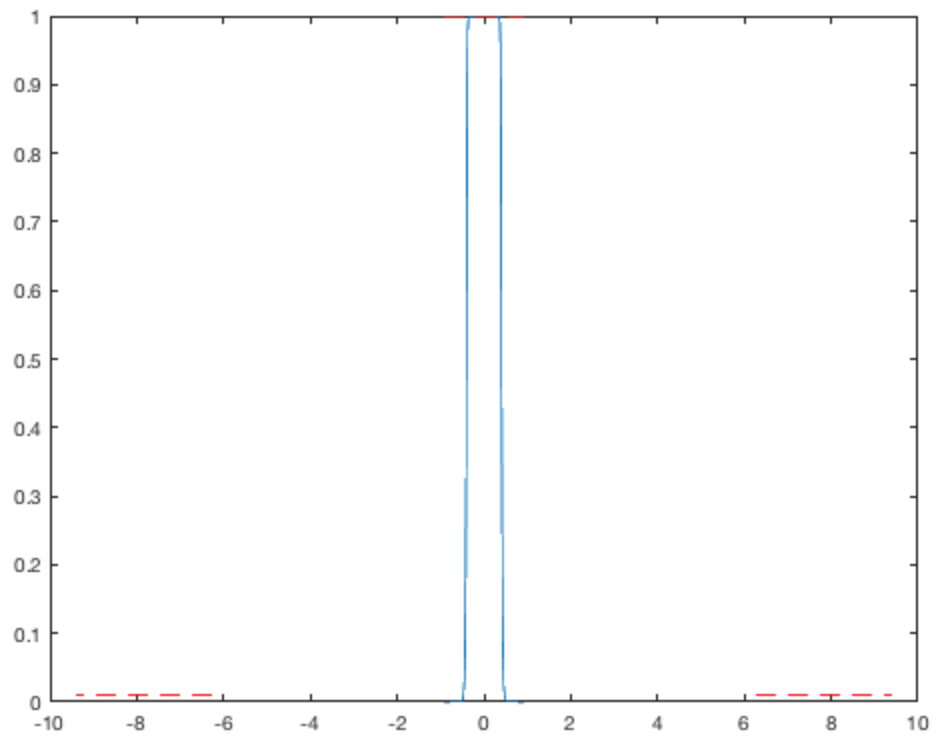
```
% Professor: Ertem Tuncel,  
% TA: Ceren Sevinc,  
% EE141-022  
  
%%1)  
%a)  
clear all  
close all  
Oc = 0.24*pi;  
OMEGA = -0.3*pi:.01:0.3*pi;  
MaxA = 1;  
N = 21;  
H = 1./sqrt(1+(OMEGA/Oc).^(2*N));  
%plot(OMEGA,H);  
%b)  
k = 1:N;  
s = Oc*exp(j*(pi/(2*N)*(2*k+N-1)));  
  
sp = poly(s);  
[Ak,p]= residue(Oc^N,sp);  
  
%c)  
  
o = -pi:0.01:pi;  
i = 1;  
Hd = zeros(1,length(o));  
  
for n = -pi:0.01:pi;  
    for q = 1:N  
        Hd(i) = Hd(i)+Ak(q)./(1-exp(p(q))*exp(-j*n));  
    end  
    i=i+1;  
end  
  
OMEGAhigh = 2*pi:0.01:3*pi;  
OMEGAlow = -OMEGAhigh;  
figure  
plot(o,abs(Hd));  
hold on  
plot(OMEGA,ones(1,189),'r--');  
plot(OMEGAhigh,0.01*ones(1,315),'r--');  
plot(OMEGAlow,0.01*ones(1,315),'r--');  
hold off  
% By visual inspection the spec appears to be satisfied.
```



2)

New requirement $-\pi \leq \tan(w/2) \leq \pi$

```
N2 = 26;
Oc2 = tan(0.24*pi/2);
H2 = 1./sqrt(1+(OMEGA/Oc2).^(2*N2));
figure
plot(OMEGA, H2);
hold on
plot(OMEGA, ones(1,189), 'r--');
plot(OMEGAhigh, 0.01*ones(1,315), 'r--');
plot(OMEGAlow, 0.01*ones(1,315), 'r--');
% The spec is satisfied
```



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