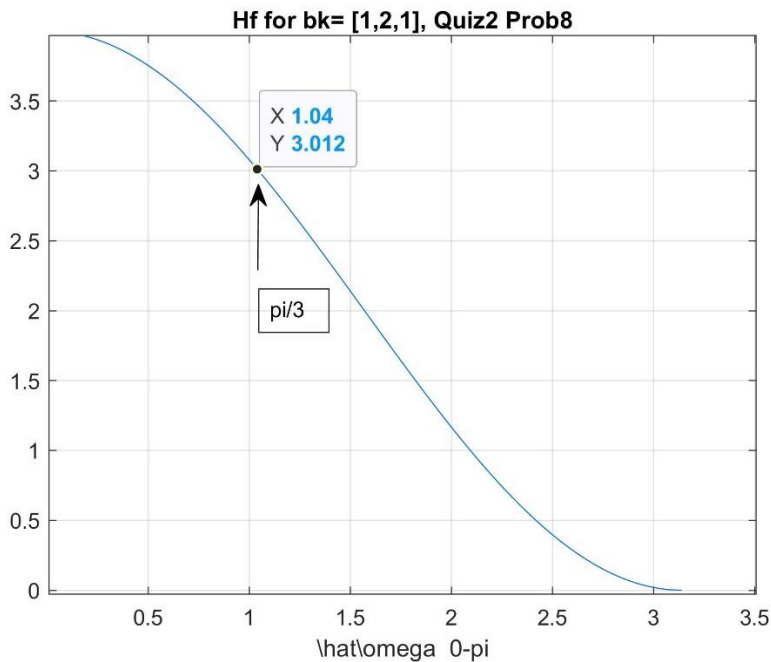


```

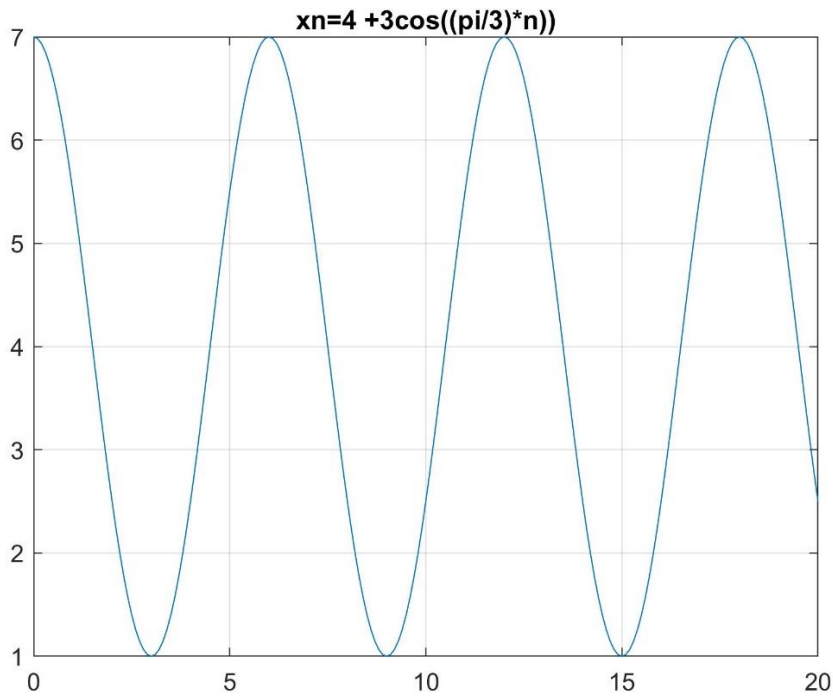
%% Quiz 2 Problem 8 Sp 21
clc, clear all, clf
% Let's Plot the H(omega) for the filter
what1= [0:.01:pi];
Hf2=abs(exp(-j*what1).*(2+2*cos(what1)));
figure(1);
plot(what1,Hf2)
title('Hf for bk= [1,2,1], Quiz2 Prob8');grid
xlabel('\hat\omega 0-pi');

%% Find y[n] for x[n]=4 + 3*cos(pi*n/3) DSPF Pg 200
n=[0:.1:20];
xn=4+3*cos((pi/3)*n); % Period = (pi/3)*6
figure(2)
plot(n,xn),grid,title('xn=4 +3cos((pi/3)*n)')
% Multipliers
whatvals=[0 pi/3] % 0 1.0472
Hf3= abs(exp(-j*whatvals).*(2+2*cos(whatvals)))
% |Hf3| = 4.0000 (at 0) 3.0000 (at pi/3 =1.047..)
% New Magnitudes
mags = [4 3].*Hf3 % [16.000,9.00000]
% Phase shift 0 pi/3
%
figure(3)
n=[0:.1:20]
yn_filtered=16+9*cos((pi/3)*(n-1))
plot(n,yn_filtered),grid,title('16+9*cos((pi/3)*(n-1))')

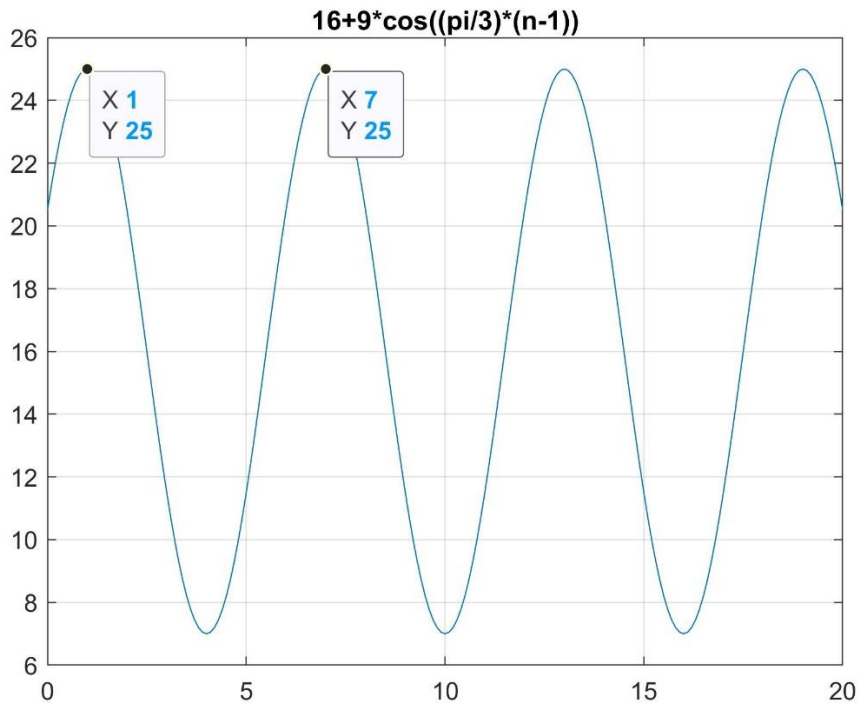
```



The Filter $H(\hat{\omega})$



The input function $x[n]$



The filtered result $y[n] = H(0)*4 + H(\pi/3)*3\cos((\pi/3)*n)$

