

PROBLEM:

The following MATLAB code will compute a time response and the frequency response of a digital filter:

```
bb = [ 3, 3 ];    aa = [ 1, -1/3 ];  
xn = [1, -1, 1, -1, 1];  
yn = filter( bb, aa, xn );  
subplot(2,1,1), stem( [0:4], yn );    %--- TIME RESPONSE  
w = -pi : (pi/100) : pi;  
H = freqz( bb, aa, w );  
subplot(2,1,2), plot( w, abs(H) )    %--- FREQUENCY RESPONSE (MAG)
```

- (a) Make the plot of y_n that will be done by the MATLAB `stem` function (in line #4).
- (b) Again referring to the MATLAB code above, make an approximate sketch of the magnitude response versus $\hat{\omega}$ over the range $-\pi \leq \hat{\omega} \leq \pi$. Label the sketch where $|H(e^{j\hat{\omega}})|$ is at its peak value and where it is zero.