PROBLEM:

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

```
bb = [ 1   1   1 ];
xn = [ zeros(1,2), 1, -1, 1, -1, 1, zeros(1,3) ];
yn = conv( bb, xn );
subplot(2,1,1), stem( [0:9], yn(1:10) );    %--- TIME RESPONSE
w = -pi : (pi/100) : pi;
H = freqz( bb, 1, w );
subplot(2,1,2), plot( w, abs(H) )      %--- FREQUENCY RESPONSE
```

(a) Make the plot of yn that will be done by the MATLAB $stem$ function (in line #4).

(b) Again referring to the MATLAB code above, make the plot of the magnitude response versus $\hat{\omega}$ over the range $-\pi \leq \hat{\omega} \leq \pi$. Justify by giving a $\boxed{\text{simple}}$ formula for the frequency response $H(e^{j\hat{\omega}})$.