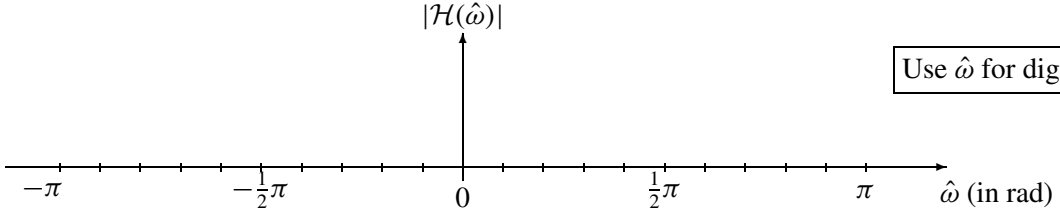
PROBLEM:

Consider the following system diagram

where $\mathcal{H}(\hat{\omega}) = e^{-j\hat{\omega}} + e^{-j3\hat{\omega}} + e^{-j5\hat{\omega}}$.

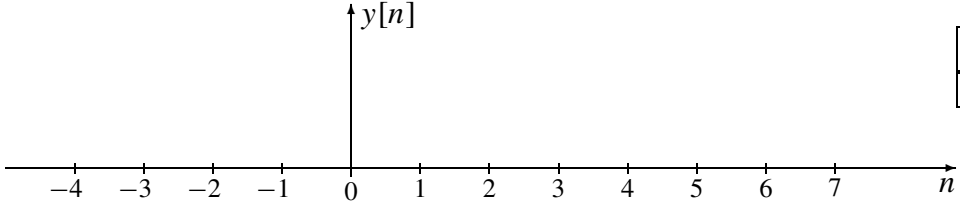
(a) Write the frequency response $\mathcal{H}(\hat{\omega})$ in polar form.

(b) Plot the magnitude vs. frequency of $\mathcal{H}(\hat{\omega})$. Label important features.



Use $\hat{\omega}$ for digital freq.

(c) For the input $x[n] = 2\delta[n] - \delta[n-2]$, plot the output signal $y[n]$.



Label Carefully

Plot zero values also