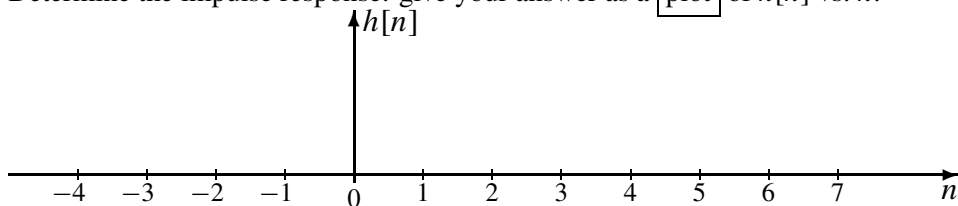


**PROBLEM:**

The following FIR filter is specified by the filter coefficients  $\{b_k\} = \{0, 2, 3, 2\}$



- (a) Determine the impulse response: give your answer as a  of  $h[n]$  vs.  $n$ .



Plot zero values also

- (b) Determine the frequency response,  $\mathcal{H}(\hat{\omega})$ , and select one of the following as the correct answer:

**(A)**  $2 \cos \hat{\omega} + 3e^{-j(2\hat{\omega}-\pi)}$    **(B)**  $(4 \cos \hat{\omega} + 3)e^{-j\hat{\omega}}$    **(C)**  $(3 + 4 \cos \hat{\omega})e^{-j2\hat{\omega}}$    **(D)**  $2 \cos \hat{\omega} + 3$

- (c) Determine the magnitude of  $\mathcal{H}(\hat{\omega})$  and present your answer as a  of the magnitude vs. frequency. Label important features.

