The following FIR filter is specified by the filter coefficients $\left\{b_{k}\right\}=\{0,2,3,2\}$

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

(b) Determine the frequency response, $\mathcal{H}(\hat{\omega})$, and select one of the following as the correct answer:
(A) $2 \cos \hat{\omega}+3 e^{-j(2 \hat{\omega}-\pi)}$
(B) $(4 \cos \hat{\omega}+3) e^{-j \hat{\omega}}$
(C) $(3+4 \cos \hat{\omega}) e^{-j 2 \hat{\omega}}$
(D) $2 \cos \hat{\omega}+3$
(c) Determine the magnitude of $\mathcal{H}(\hat{\omega})$ and present your answer as a plot of the magnitude vs. frequency. Label important features.


