PROBLEM:

FREQ RESPONSE: A

FREQ RESPONSE: B
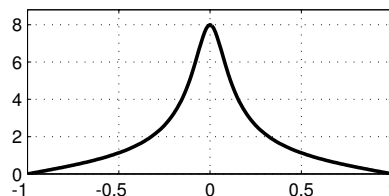
FREQ RESPONSE: C

FREQ RESPONSE: D
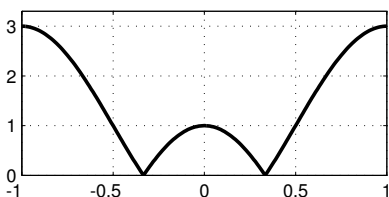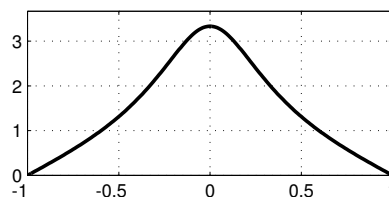
FREQ RESPONSE: E

FREQ RESPONSE: F
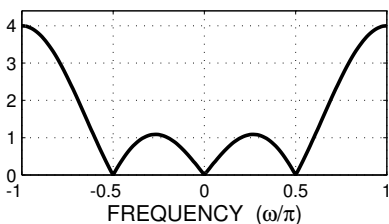
FREQUENCY (ω/π)
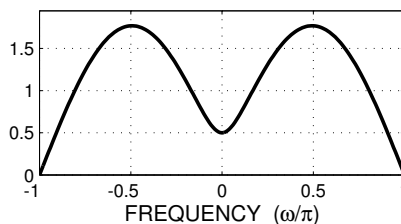
FREQUENCY (ω/π)

For each of the frequency response plots (A, B, C, D, E, F), determine which one of the following systems (specified by either an $H(z)$ or a difference equation) matches the frequency response (magnitude only). NOTE: frequency axis is **normalized**; it is $\hat{\omega}/\pi$.

| **A:** | **B:** | **C:** | **D:** | **E:** | **F:** |

$\mathcal{S}_1:$ $y[n] = x[n] - x[n-1] + x[n-2]$

$\mathcal{S}_2:$ $H(z) = 1 - z^{-1} + z^{-2} - z^{-3}$

$\mathcal{S}_3:$ $y[n] = x[n] + \frac{1}{4}x[n-1] - \frac{3}{4}x[n-2]$

$\mathcal{S}_4:$ $H(z) = \frac{1}{3}(1 - z^{-1})^3$

$\mathcal{S}_5:$ $y[n] = 0.4y[n-1] + x[n] + x[n-1]$

$\mathcal{S}_6:$ $H(z) = \dfrac{1 + z^{-1}}{1 - 0.75z^{-1}}$

$\mathcal{S}_7:$ $y[n] = -0.75y[n-1] + x[n] - x[n-1]$

$\mathcal{S}_8:$ $H(z) = \dfrac{1 - z^{-1}}{1 - 0.75z^{-1}}$