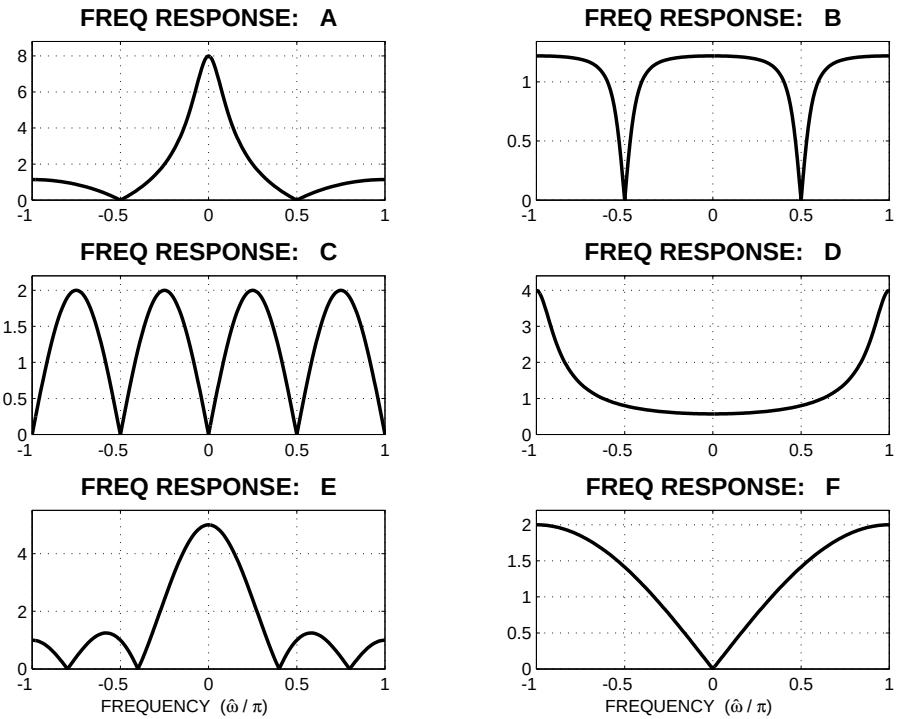
PROBLEM:



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 $\hat{\omega}/\pi$.

$\mathcal{S}_1$: $y[n] = -.75y[n-1] + x[n]$

$\mathcal{S}_2$: $H(z) = \dfrac{1+z^{-2}}{1+0.64z^{-2}}$

$\mathcal{S}_3$: $H(z) = \sum_{k=0}^{4} z^{-k}$

$\mathcal{S}_4$: $H(z) = \dfrac{1+z^{-2}}{1-0.75z^{-1}}$

$\mathcal{S}_5$: $H(z) = \dfrac{2}{1-z^{-1}} + \dfrac{-1}{1-.5z^{-1}}$

$\mathcal{S}_6$: $H(z) = \sum_{k=0}^{4} (0.9)^k z^{-k}$

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

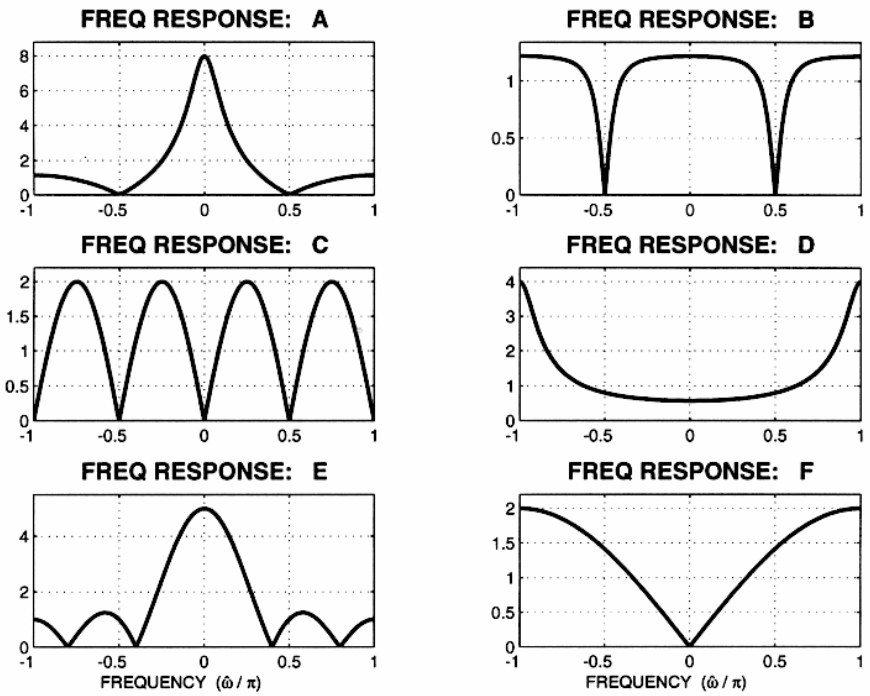
$\mathcal{S}_8$: $H(z) = 1 - z^{-4}$

Mark your answer in the following table:

FREQUENCY RESPONSE	SYSTEM ($\mathcal{S}_\#$)	FREQUENCY RESPONSE	SYSTEM ($\mathcal{S}_\#$)
A		B	
C		D	
E		F	

McClellan, Schafer and Yoder, *Signal Processing First*, ISBN 0-13-065562-7.
Prentice Hall, Upper Saddle River, NJ 07458.

SOLUTION



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FREQUENCY RESPONSE	SYSTEM ($\mathcal{S}_\#$)	FREQUENCY RESPONSE	SYSTEM ($\mathcal{S}_\#$)
A	4	B	2
C	8	D	1
E	3	F	7