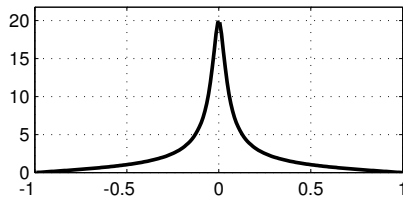
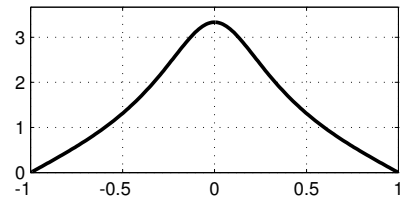
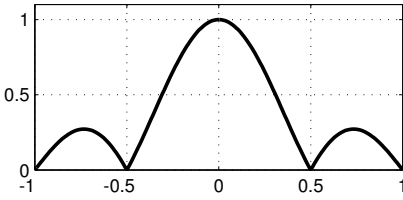
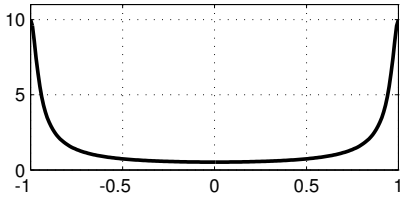
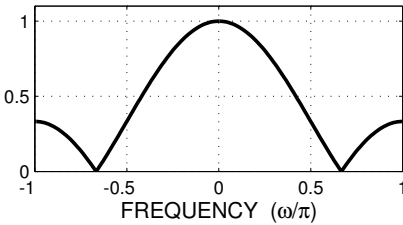
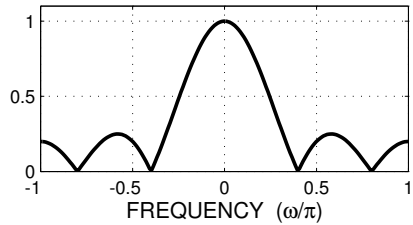


**PROBLEM:****FREQ RESPONSE: A****FREQ RESPONSE: B****FREQ RESPONSE: C****FREQ RESPONSE: D****FREQ RESPONSE: E****FREQ RESPONSE: F**

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:** 

$$S_0 : y[n] = 0.9y[n-1] + x[n] + x[n-1]$$

$$S_1 : y[n] = 0.4y[n-1] + x[n] + x[n-1]$$

$$S_2 : H(z) = \frac{z^{-1}}{1 + 0.9z^{-1}}$$

$$S_3 : H(z) = \frac{1}{3}(1 + z^{-1} + z^{-2})$$

$$S_4 : y[n] = \frac{1}{4}x[n] + \frac{1}{4}x[n-1] + \frac{1}{4}x[n-2] + \frac{1}{4}x[n-3]$$

$$S_5 : y[n] = \frac{1}{5} \sum_{k=0}^4 x[n-k]$$

$$S_6 : H(z) = (1 + z^{-1})^3$$