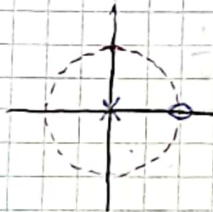
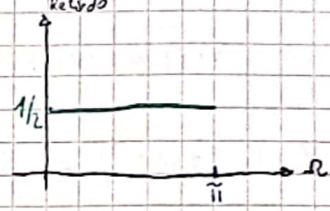
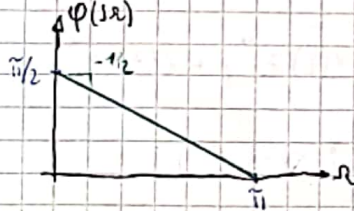
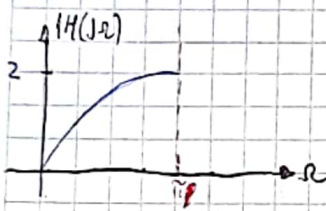


b) Filtro Diferenciador

$$h_1[k] = (1, -1) \Rightarrow Y[k] = x[k] - x[k-1]$$

$$\Rightarrow Y(z) = X(z)(1 - z^{-1}) \Rightarrow H(z) = \frac{Y(z)}{X(z)} = \frac{z-1}{z}$$

$$H(j\Omega) = (1 - e^{-j\Omega}) = e^{-j\Omega/2} (e^{j\Omega/2} - e^{-j\Omega/2}) = e^{-j\Omega/2} (2j \sin(\Omega/2)) = e^{-j(\Omega/2 - \pi/2)} [2 \sin(\Omega/2)]$$



$$h_2[k] = (1, 0, -1) \Rightarrow Y[k] = x[k] - x[k-2] \Rightarrow Y(z) = X(z) - X(z)z^{-2}$$

$$H(z) = \frac{Y(z)}{X(z)} = 1 - z^{-2} = \frac{z^2 - 1}{z^2} \Rightarrow H(j\Omega) = 1 - e^{-j2\Omega} = e^{-j\Omega} (e^{j\Omega} - e^{-j\Omega})$$

$$H(j\Omega) = e^{-j\Omega} (2j \sin(\Omega)) = e^{-j(\Omega + \pi/2)} [2 \sin(\Omega)]$$

