PROBLEM:

For each of the difference equations below, determine the poles and zeros of the corresponding system function, $H(z)$.

$$\mathcal{S}_1: \quad y[n] = 0.4y[n-1] + x[n] + x[n-1]$$

$$\mathcal{S}_3: \quad y[n] = -0.75y[n-1] + x[n] - x[n-1]$$

$$\mathcal{S}_6: \quad y[n] = x[n] - x[n-1] + x[n-2] - x[n-3]$$

$$\mathcal{S}_7: \quad y[n] = x[n] + \tfrac{1}{4}x[n-1] - \tfrac{3}{4}x[n-2]$$