Question #1:   Consider the difference equation

$$y[n] - \cos(\omega_0)y[n-1] + (1/4)y[n-2] = x[n] \,,$$

which represents a causal LTI system.

(a) Compute the z-transform of the system $H(z)$.

(b) Sketch the pole-zero plot for the system for $\omega_0 = 0$, $\omega_0 = \pi/3$, and $\omega_0 = \pi/2$.

Question #2: Consider the impulse response

$$h[n] = (2)^{n-1}u[n-2] - (1/4)^{-n}u[-n] \, ,$$

which represents a causal LTI system.

(a) Compute the z-transform of the system $H(z)$.

(b) Sketch the pole-zero plot for the system with transfer function

$$H(z) = \frac{2}{z^{-1}} + \frac{1 + z^{-1}}{1 - 0.5z^{-1}}$$