Quiz #11 EE 360 Fall 2021 Name:_____

Open book and open notes

Show your work for credit and place boxes around your answers.

Consider a stable linear time-invariant (LTI) system that can be described by the linear constant coefficient difference equation

$$y[n] - \frac{1}{6}y[n-1] - \frac{1}{6}y[n-2] = 3x[n] - \frac{1}{3}x[n-1] - \frac{1}{6}x[n-2]$$

Where x(n) is the system's input and y(n) is the system's output.

a) Determine the system function, H(z), and the system's Zero-Input Response, $H_{ZIR}(z)$.

Leave your answer in terms of z^{-1}. Plot the region of convergence for the Zero-State Response

b) Determine the system's impulse response (ZSR), $h(n)$, using the Z-Transform.