

PROBLEM:

A unit impulse sequence is defined as

$$\delta[n] = \begin{cases} 1 & n = 0 \\ 0 & n \neq 0 \end{cases}$$

Suppose that a LTI system has system function equal to

$$H(z) = 1 + 5z^{-1} - 3z^{-2} + 2.5z^{-3} + 4z^{-8}$$

- Determine the difference equation that relates the output $y[n]$ of the system to the input $x[n]$.
- Determine and plot the output sequence $y[n]$ when the input is $x[n] = \delta[n]$. How is the output due to an impulse related to $H(z)$?