Prof. Brian L. Evans Notes by Mr. Houshang Salimian Fall 2018

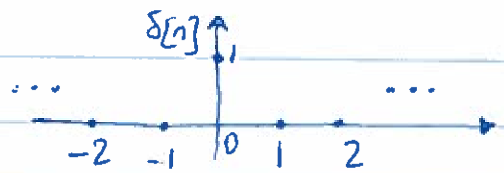
EE 313 Linear Systems and Signals

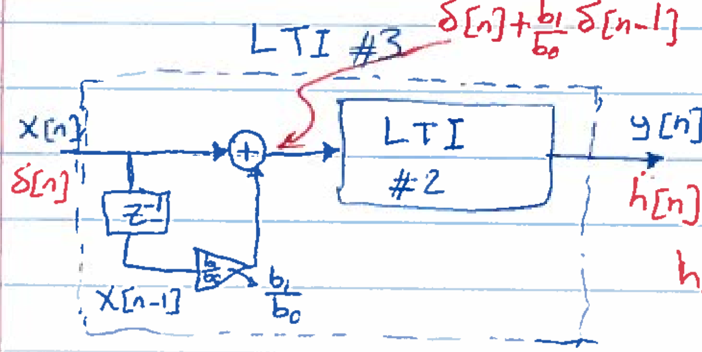
The University of Texas at Austin

Impulse Response

Response to an impulse

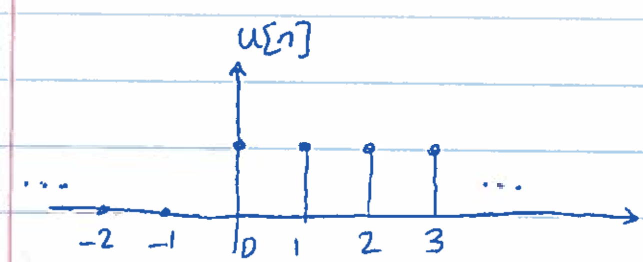
let $x[n] = \delta[n]$,



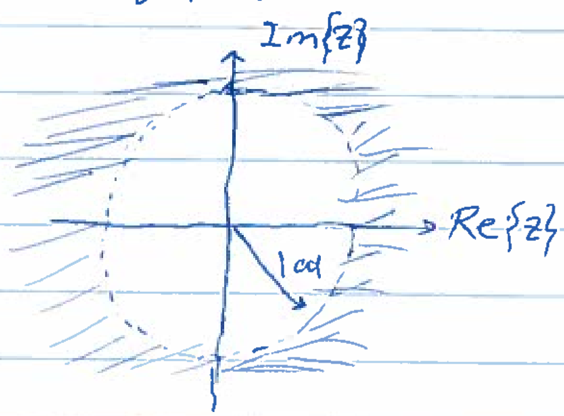


$h[n] = b_0 (a_1)^n u[n] + \frac{b_1}{b_0}\left(b_0 (a_1)^{n-1} u[n-1]\right)$

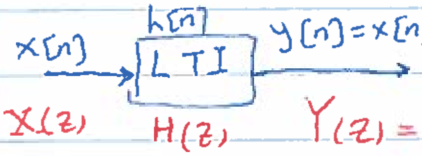
Initial condition in the delay block



$a^n z^{-n} = a^n \left(\frac{1}{z}\right)^n = \left(\frac{a}{z}\right)^n$



$|z| > |a|$



$Y(z) = X(z)\,H(z) \rightarrow H(z) = \dfrac{Y(z)}{X(z)}$