

EE 2000 Assignment # 14

(taken from Dr. Jingxian Wu, University of Arkansas, 2020.)

1. Find the Convolution Sum between $x(n)$ and $h(n)$.

(a) $x(n) = \left(\frac{1}{3}\right)^n u(n)$, $h(n) = u(-n)$.

(b) $x(n) = [1, 2, 3]_{\uparrow}$, $h(n) = [1, 2]_{\uparrow}$

2. Find the Bilateral Z-transform of the following signals

(a) $x(n) = 3^n u(-n - 2)$

(b) $x(n) = [2, 1, 3, 5, 6]_{\uparrow}$

3. Consider a system described by the following difference equation

$$y(n) - 0.5y(n - 2) = 2x(n) - x(n - 1) - 0.5x(n - 2) \quad (1)$$

(a) Find the transfer function in the Z-domain

(b) Is the system BIBO-stable?