

HOMEWORK # 3

- 3.1 The impulse response of a CT LTI system is $h(t) = u(t)$. Determine the response of the system to each of the following inputs. (a) $3\delta(t - 2) - 3\delta(t - 6)$, (b) $u(t)$, (c) $tu(t)$, (d) $4[u(t) - u(t - 5)]$, (e) $e^{-3t}u(t)$
- 3.6 Consider an LTI system with the impulse response given by $h(t) = u(t) - u(t - 2)$. Determine and sketch the response of the system for the input $x(t)$ as shown in Figure P3.6.

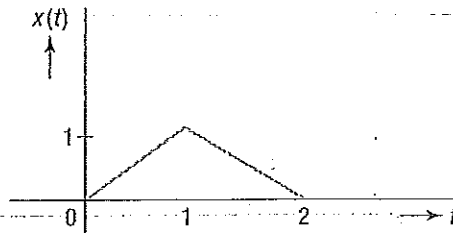


FIGURE P3.6

- 3.7 Obtain graphically the response of a system with the impulse response and input as given in Problem 3.6.
- 3.8 For an LTI system with the impulse response $h(t)$ and input $x(t)$ as shown in Figure P3.8, determine the response $y(t)$ for all t .

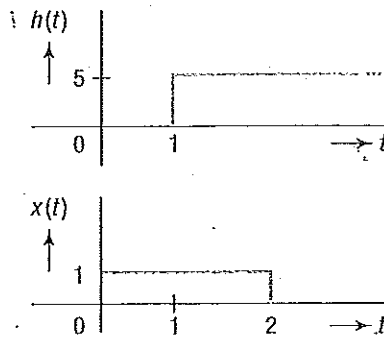


FIGURE P3.8

- 3.14 The step response of an LTI system is given by $y_s(t) = 2u(t) - e^{-5t}u(t)$. What is the impulse response of the system? What is the response to the pulse $3[u(t - 2) - u(t - 6)]$?