

# Signals and Systems

Assignment

Total Marks=20

Q#01

Sketch each of the following signals.

(a)  $x[n] = \delta[n] + \delta[n - 3]$

(b)  $x[n] = u[n] - u[n - 5]$

(c)  $x[n] = \delta[n] + \frac{1}{2}\delta[n - 1] + (\frac{1}{2})^2\delta[n - 2] + (\frac{1}{2})^3\delta[n - 3]$

(d)  $x(t) = u(t + 3) - u(t - 3)$

(e)  $x(t) = \delta(t + 2)$

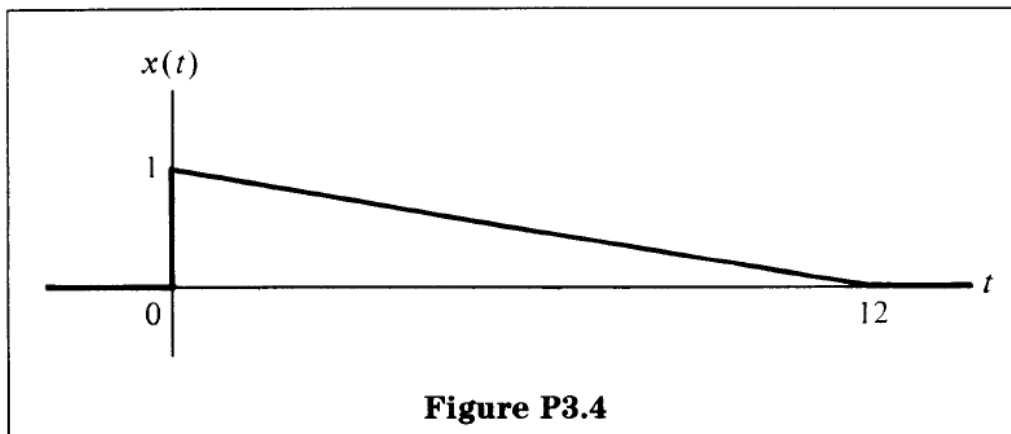
(f)  $x(t) = e^{-t}u(t)$

Q#02

For  $x(t)$  indicated in Figure P3.4, sketch the following:

(a)  $x(1 - t)[u(t + 1) - u(t - 2)]$

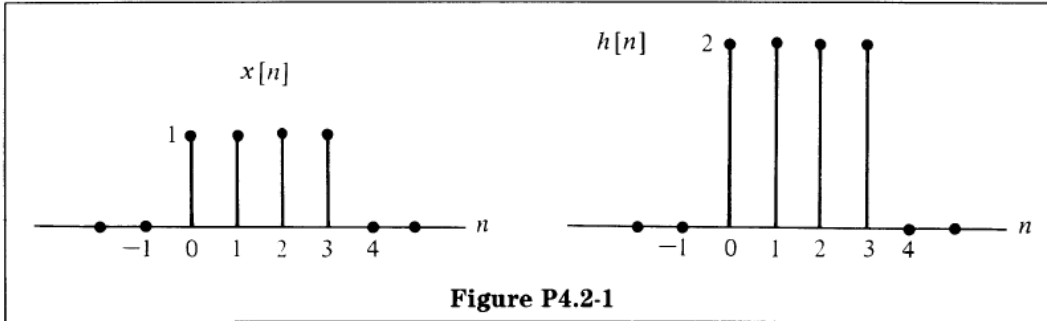
(b)  $x(1 - t)[u(t + 1) - u(2 - 3t)]$



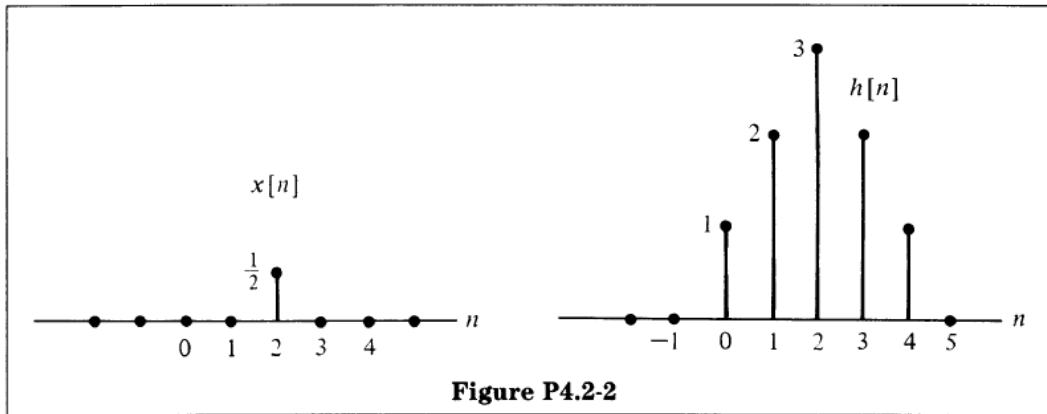
Q#03

Determine the discrete-time convolution of  $x[n]$  and  $h[n]$  for the following two cases.

(a)



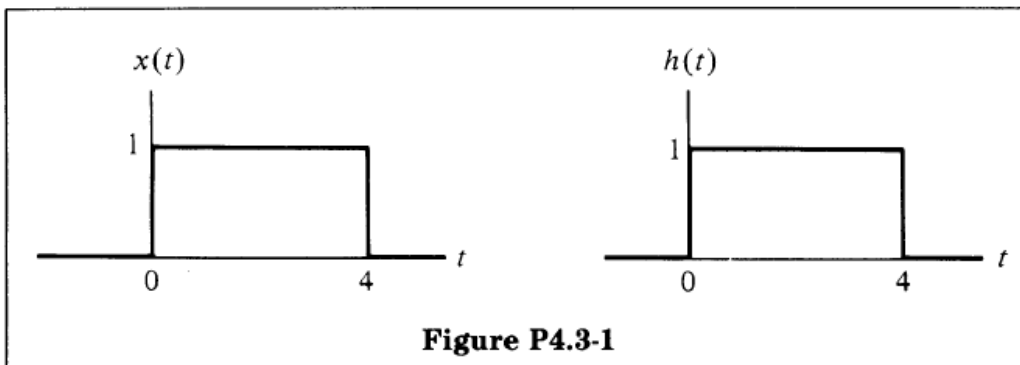
(b)



Q#04

Determine the continuous-time convolution of  $x(t)$  and  $h(t)$  for the following three cases:

(a)



(b)

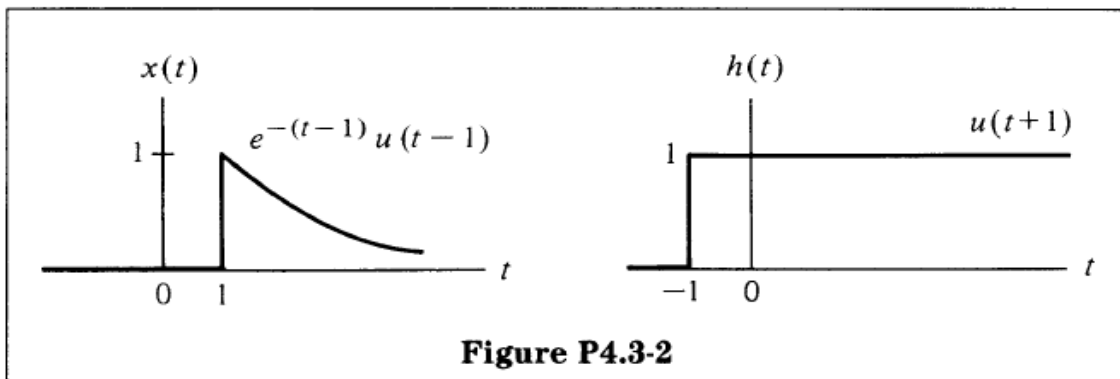


Figure P4.3-2

(c)

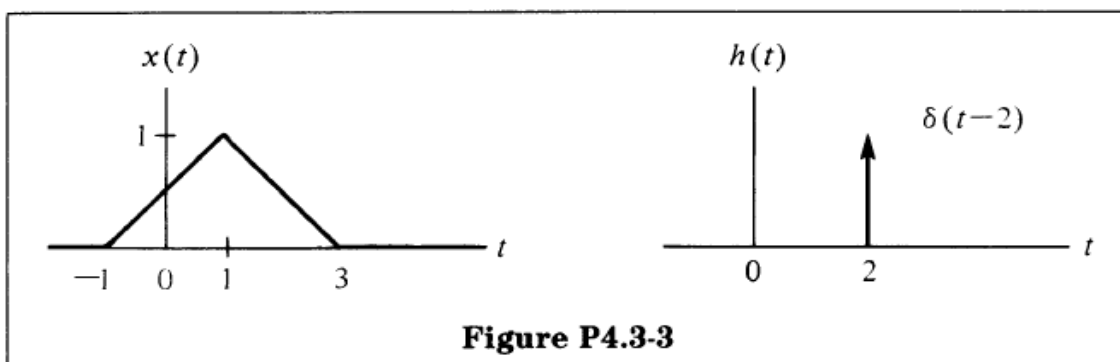


Figure P4.3-3