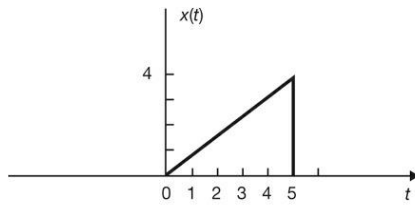


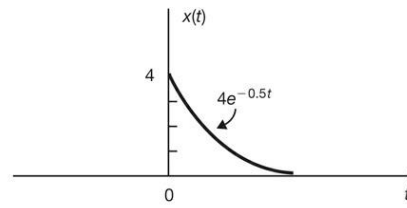
1-03-b - Tutorial – Questions

Question 1

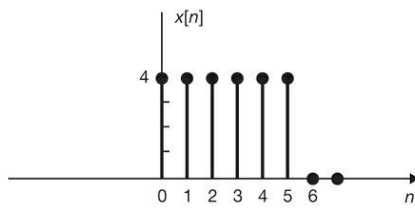
Sketch and label the even and odd components of the signals shown below.



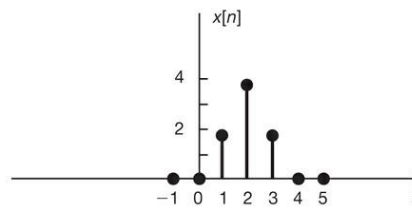
(a)



(b)



(c)



(d)

Question 2

Show that the product of two even signals or of two odd signals is an even signal and that the product of an even and an odd signal is an odd signal.

Question 3

Determine whether or not each of the following signals is periodic. If a signal is periodic, determine its fundamental period.

$$(a) x(t) = \cos\left(t + \frac{\pi}{4}\right)$$

$$(b) x(t) = \sin\frac{2\pi}{3}t$$

$$(c) x(t) = \cos\frac{\pi}{3}t + \sin\frac{\pi}{4}t$$

$$(d) x(t) = \cos t + \sin\sqrt{2}t$$

$$(e) x(t) = \sin^2 t$$

$$(f) x(t) = e^{j[(\pi/2)t-1]}$$

Question 4

A continuous-time signal $x(t)$ is shown below. Sketch and label each of the following signals.

(a) $x(t)u(1-t)$; (b) $x(t)[u(t) - u(t-1)]$; (c) $x(t)\delta(t - \frac{3}{2})$

