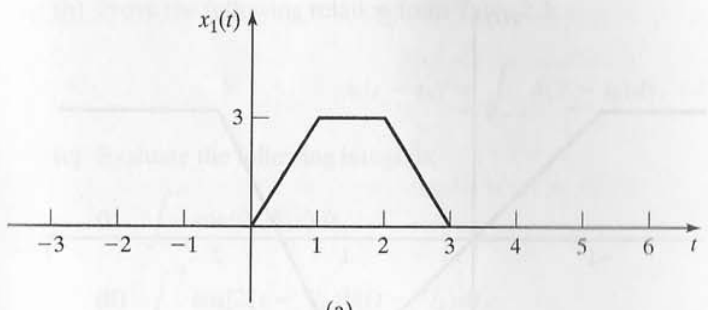
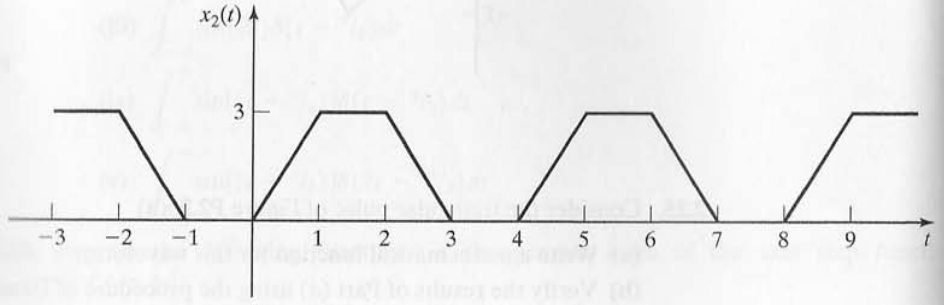


(a)



(b)

gure P2.26

ection 2.6

27. **(a)** Express the output $y(t)$ as a function of the input and the system transformations, in the form of (2.56), for the system of Figure P2.27(a).

(b) Repeat Part (a) for the case that the summing junction with inputs $y_3(t)$ and $y_5(t)$ is replaced with a multiplication junction, such that its output is the product of these two signals.

(c) Repeat Part (a) for the system of Figure P2.27(b).

(d) Repeat Part (b) for the case that the summing junction with inputs $y_3(t)$, $y_4(t)$, and $y_5(t)$ is replaced with a multiplication junction, such that its output is the product of these three signals.

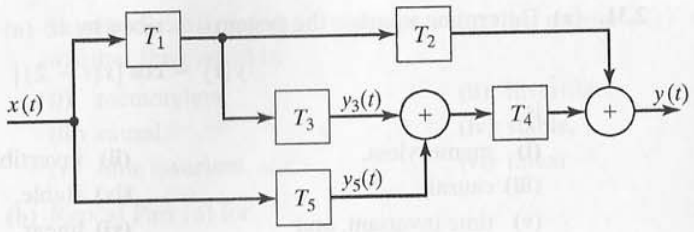
28. Consider the feedback system of Figure P2.28. Express the output signal as a function of the transformation of the input signal, in the form of (2.58).

29. Consider the feedback system of Figure P2.29. Express the output signal as a function of the transformation of the input signal, in the form of (2.58). The minus sign at the summing junction indicates that the signal is subtracted.

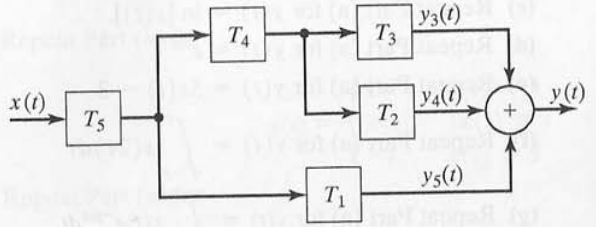
ection 2.7

30. **(a)** Determine whether the system described by

$$y(t) = \int_{t}^{t+1} x(\tau - \alpha)d\tau,$$



(a)



(b)

Figu

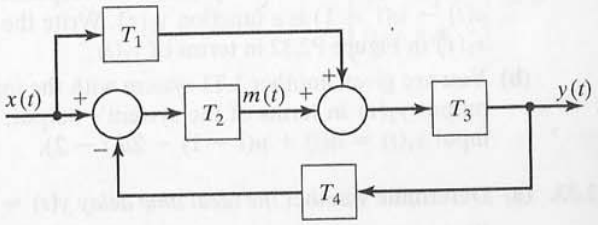


Figure P2

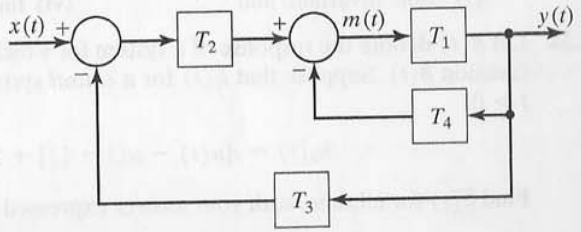


Figure P2

(where α is a constant) is

(i) memoryless, **(ii)** invertible,

(iii) stable, **(iv)** time invariant, and

(v) linear.

(b) For what values of the constant α is the system causal?