

Tutorial 2

Q1 A continuous-time signal $x(t)$ is shown in Figure 1. Sketch and label each of the following signals.

(a) $x(t)u(1-t)$

(b) $x(t)[u(t) - u(t-1)]$

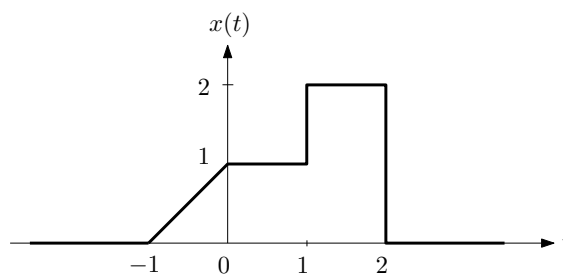


Figure 1

Q2 A continuous-time signal $x(t)$ is shown in Figure 2. Sketch and label each of the following signals.

(a) $x(t-2)$

(b) $x(2t)$

(c) $x(t/2)$

(d) $x(-t)$

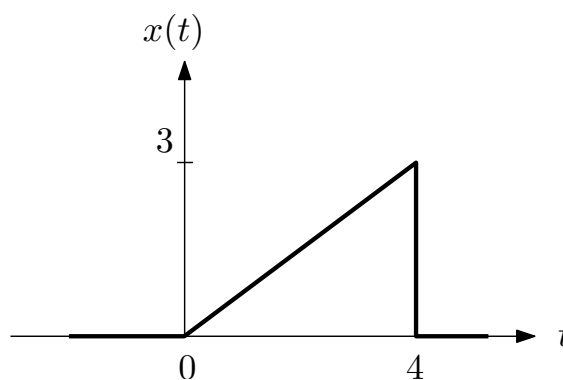


Figure 2

Q3 Express the signals shown in Figure 3 in terms of unit step functions

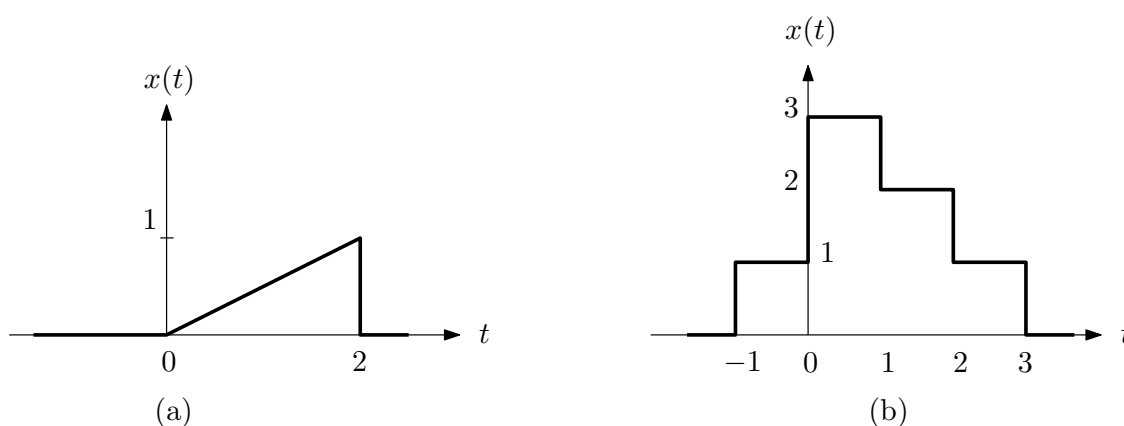


Figure 3

Q4 A discrete-time signal $x[n]$ is shown in Figure 4. Sketch and label each of the following signals.

- (a) $x[n]u[1 - n]$
- (b) $x[n]\{u[n + 2] - u[n]\}$
- (c) $x[n]\delta[n - 1]$

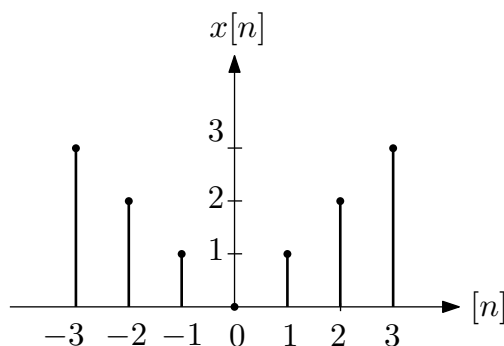


Figure 4

Q5 Given the sequence $x(n) = (6 - n)[u(n) - u(n - 6)]$, make a **sketch** of

- (a) $y_1[n] = x[4 - n]$.
- (b) $y_2[n] = x[2n - 3]$.

Q6 Express the sequence

$$x[n] = \begin{cases} 1 & n = 0 \\ 2 & n = 1 \\ 3 & n = 2 \\ 0 & \text{else} \end{cases}$$

as a sum of scaled and shifted **unit steps**.

Q7 Express the sequence in **Q6** as a sum of scaled and shifted **unit samples**.