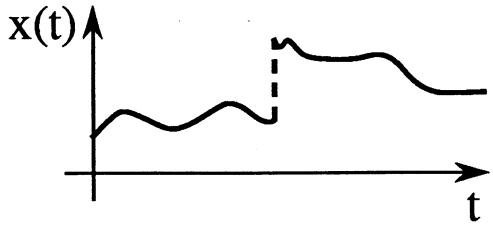
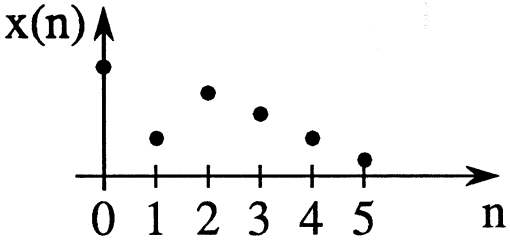
1.1.1 SIGNAL TYPES

1. Continuous-time (CT) (analog)



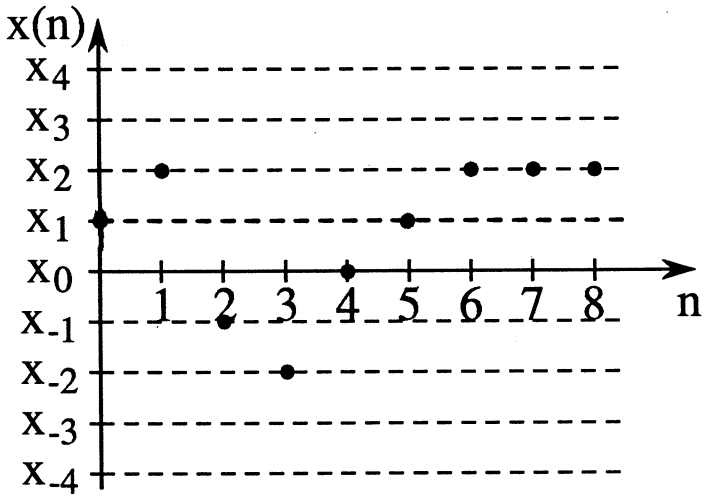
Note that signal need *not* be continuous in amplitude.

2. Discrete-time (DT)



Signal is undefined between sampling instances.

3. Digital (discrete-time - discrete-amplitude)



Levels need not
be uniformly spaced.

Comments

1. In practice, we work with digital signals; but in most of the theory, we make no distinction between discrete-time and digital signals.

2. The independent variable need not be time.

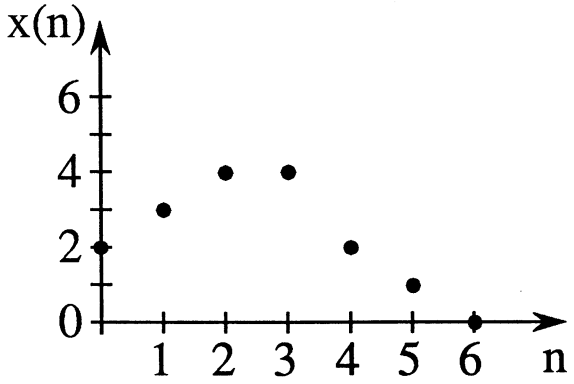
3. x(n) may or may not be sampled from an analog waveform, *i.e.*

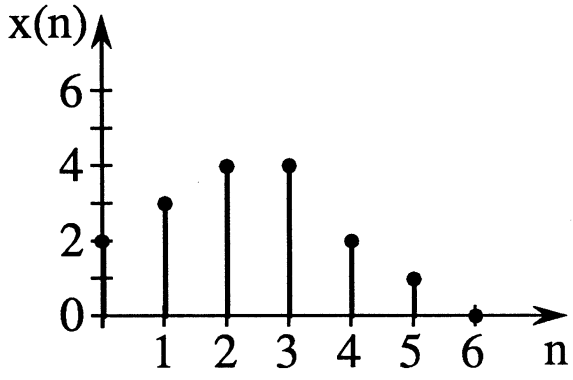
$$x_d(n) = x_a(nT) \quad T - \text{sampling interval}$$

digital analog

We will use the subscripts "d" and "a" only when necessary for clarity.

Equivalent Representations for DT Signals





n	0	1	2	3	4	5	6
x(n)	2	3	4	4	2	1	0

$x(n)$ or x_n