

Signal & Systems

Lecture # 6 Revision

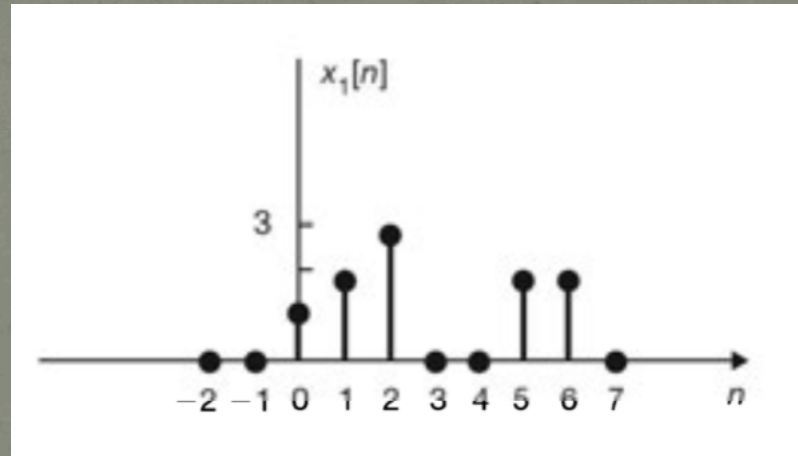
29th November 18

Signal Operations

Example #1

- A discrete-time signal $x_1[n]$ is shown below. Sketch and label the following signals:

$$4x[-n+2]$$



Energy & Power

Example #2

- Determine whether the signals are power or energy signals. Calculate both energy and power of the following signals:
 - (1): $x(t) = 0.9e^{-3t}u(t)$
 - (2): $x[n] = u[n]$

Periodic/APeriodic

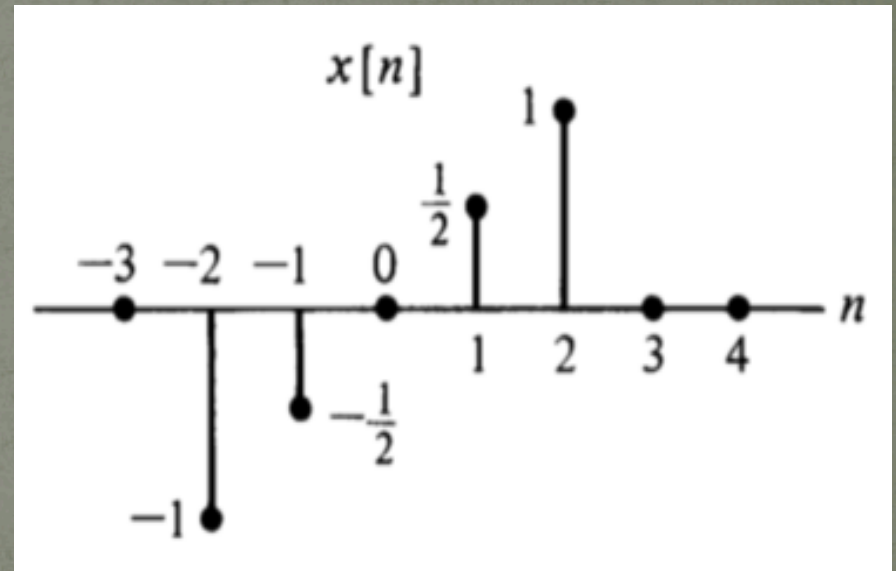
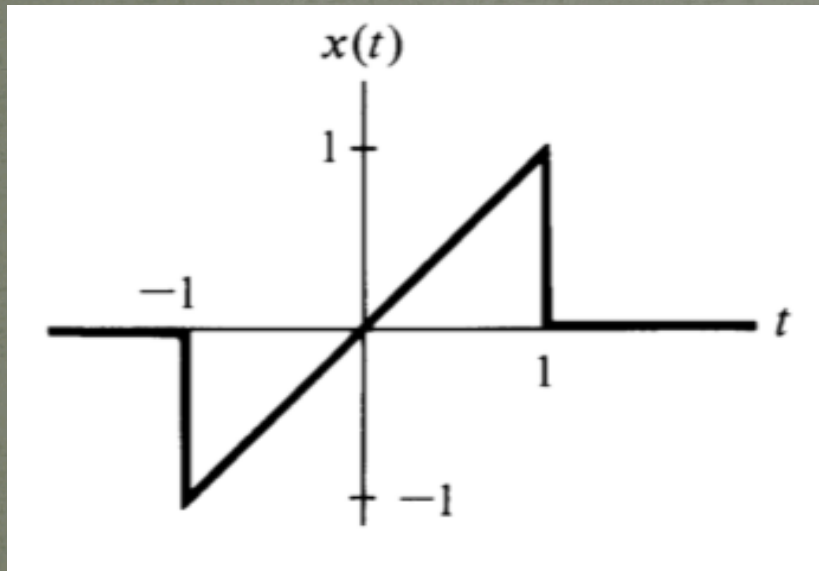
Example #3

- Determine whether or not each of the following signals is periodic. If a signal is periodic, determine its fundamental period:
 - (1): $x(t) = \cos(2\pi t) + \sin(10\pi t)$
 - (2): $x[n] = 3\sin(3\pi n + \pi / 2)$

Even & Odd Signals

Example #4

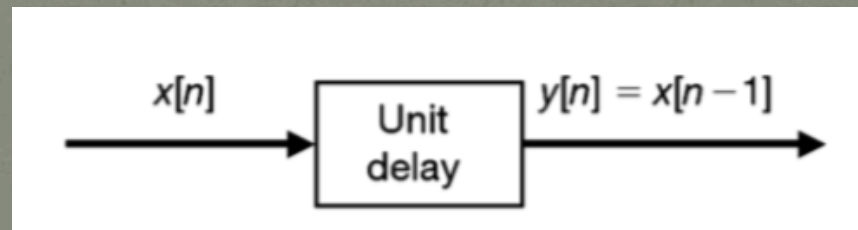
- For each of the following signals, determine whether it is even, odd or neither.



Continuous & Discrete Systems

Example #5

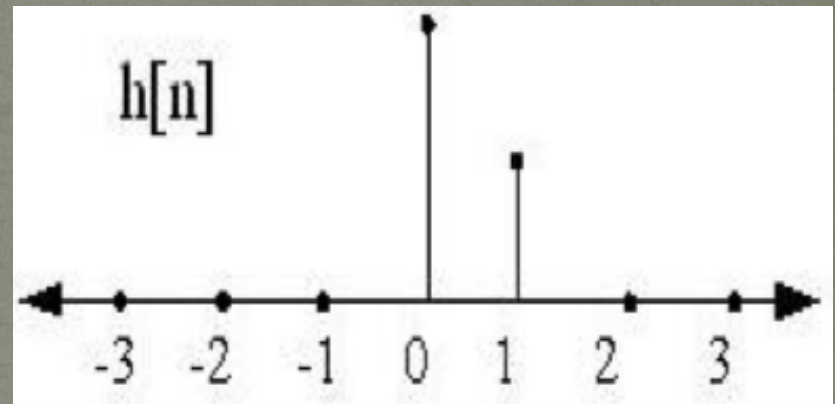
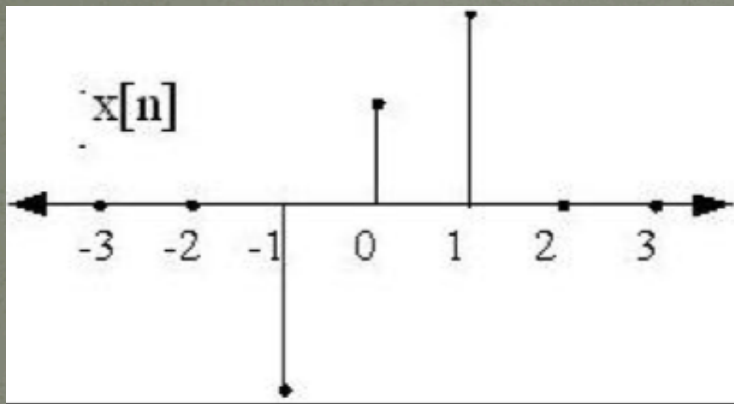
- The discrete time system is shown below is known as the unit delay element. Determine whether it is:
 - (1): Memoryless
 - (2): Causal
 - (3): Linear
 - (4): Time-invariant
 - (5): Stable



Convolution

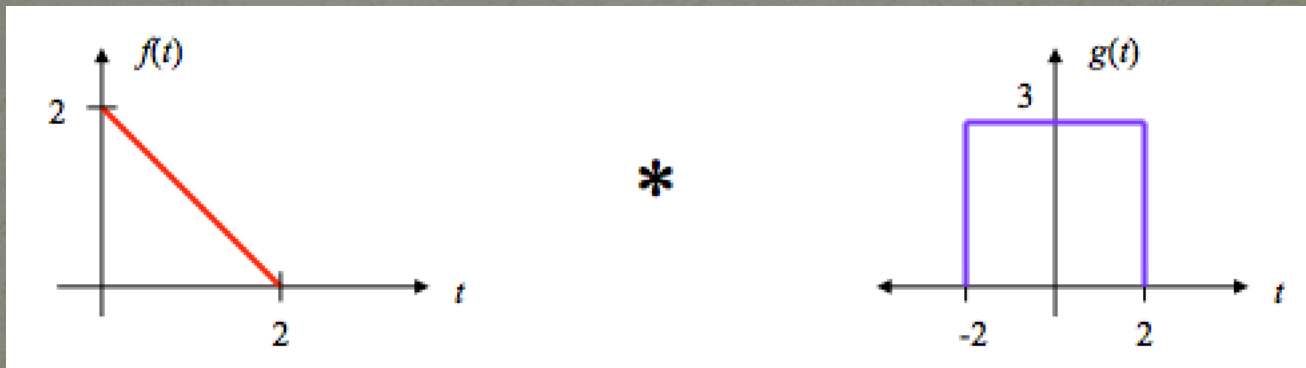
Example #6

- Convolve the following two signals:



Example #7

- Convolve the following two continuous time signals:



The End
