

Impulse Response Descriptions

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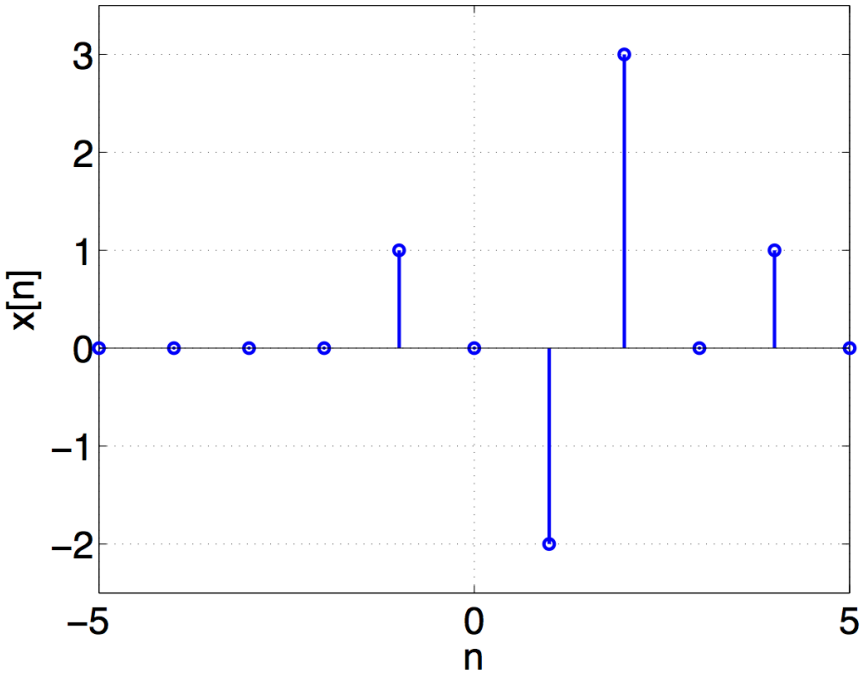
1. The impulse response of a system is the output when the input is a(n) _____ signal.

- a) step
- b) impulse
- c) exponential
- d) sinusoidal

2. The impulse response allows you to determine the output for any input if the system is linear and time invariant.

- a) True
- b) False

Problems 3-7 consider the discrete-time signal $x[n]$ is depicted in the figure below.

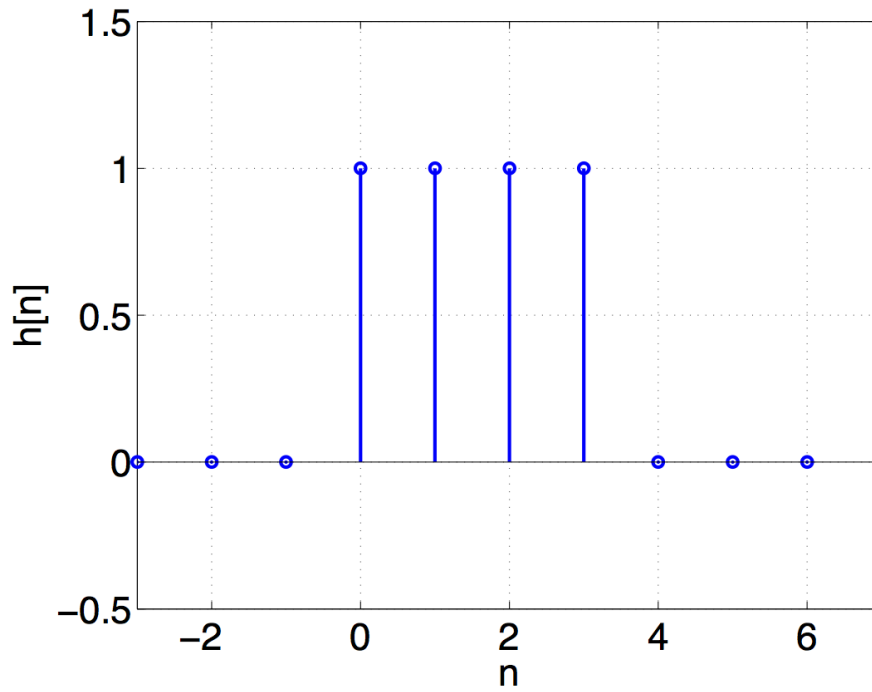


3. Express this signal as a weighted sum of time-shifted impulses.

Problems 4-7 apply $x[n]$ to a LTI system with impulse response

$$h[n] = \begin{cases} 1 & n = 0, 1, 2, 3 \\ 0 & \text{otherwise} \end{cases}$$

as shown in the figure below.



4. Evaluate the output $y[n]$ of this system if the input is the component of $x[n]$ associated with $\delta[n + 1]$

5. Evaluate the output $y[n]$ of this system if the input is the component of $x[n]$ associated with $\delta[n - 1]$

6. Evaluate the output $y[n]$ of this system if the input is the component of $x[n]$ associated with $\delta[n - 2]$

7. Evaluate the output $y[n]$ of this system if the input is $x[n]$.