

LTI System Properties Example

Determine if the system

$$y[n] = x[n] \cos(0.2\pi n)$$

is (1) linear (2) time invariant

Two system are connected in cascade, that is the output of \mathcal{S}_1 is connected into the input of \mathcal{S}_2

$$\mathcal{S}_1: y_1[n] = x_1[n] + x_1[n-2] - x_1[n-3]$$

$$\mathcal{S}_2: y_2[n] = x_2[n] + 2x_2[n-1]$$

- Find the impulse response, $h[n]$, of the cascade
 - Draw the *direct form* block diagram for the first system \mathcal{S}_1
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