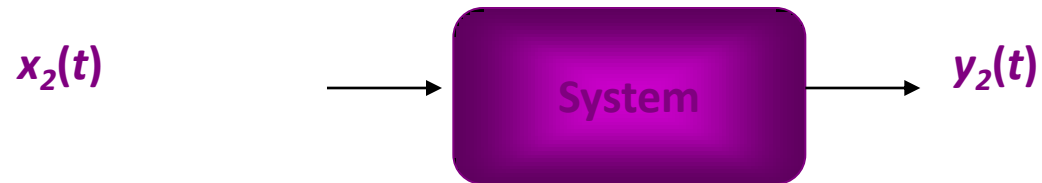
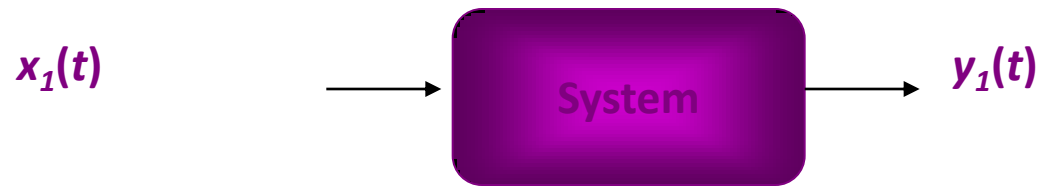


SYSTEM DESCRIPTION

1. Linearity



THEN



SYSTEM DESCRIPTION

2. Homogeneity

IF

$x_1(t)$



$y_1(t)$

THEN

$ax_1(t)$

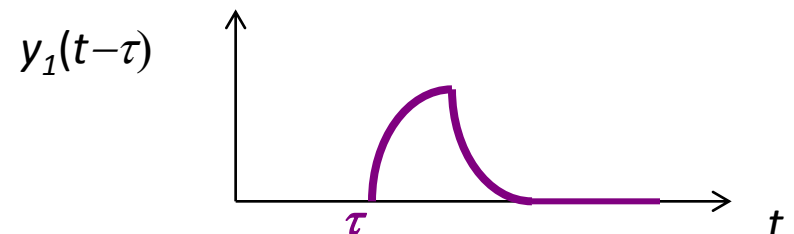
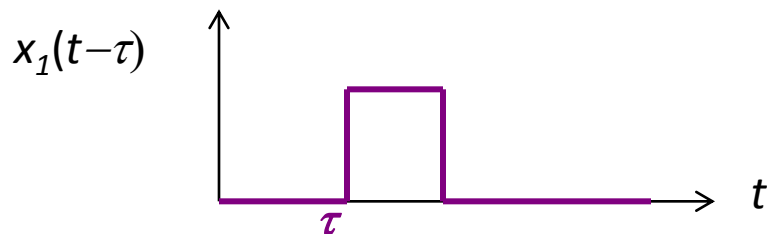
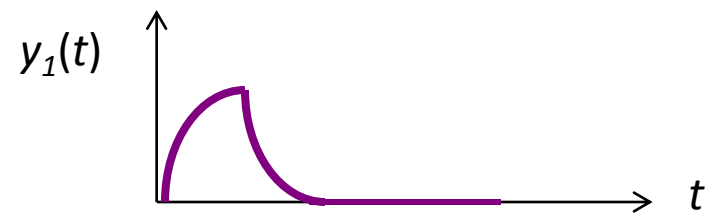
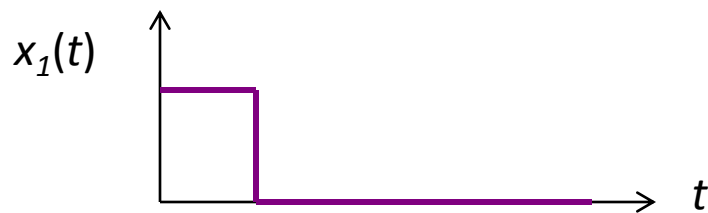
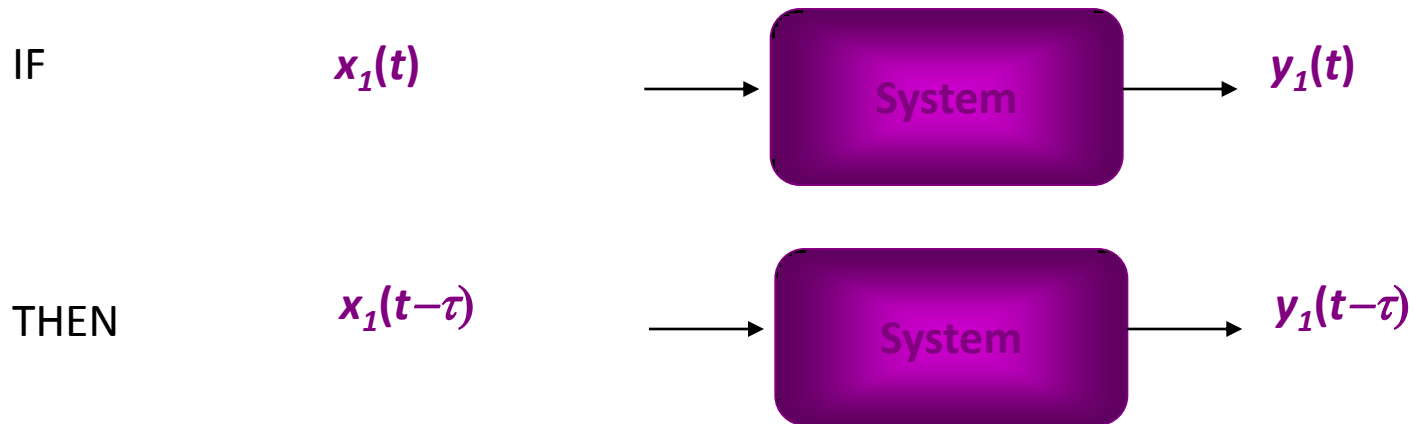


$ay_1(t)$

Where a is a constant

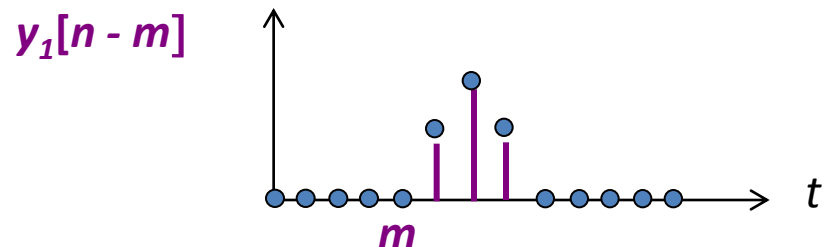
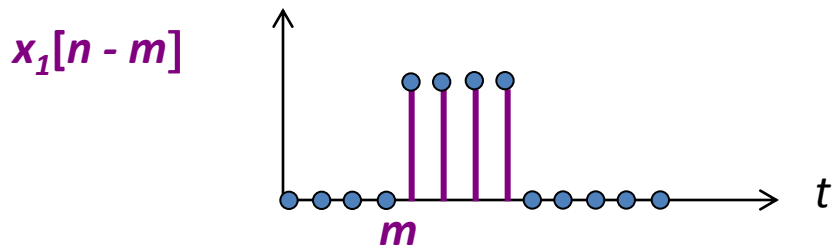
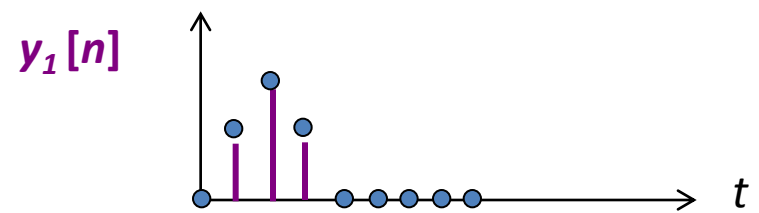
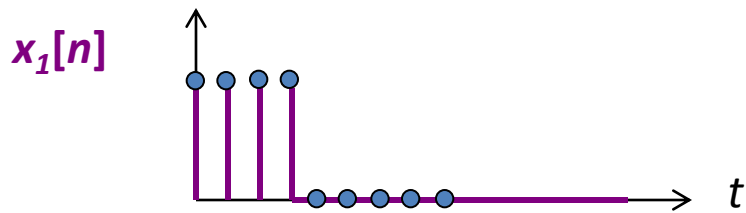
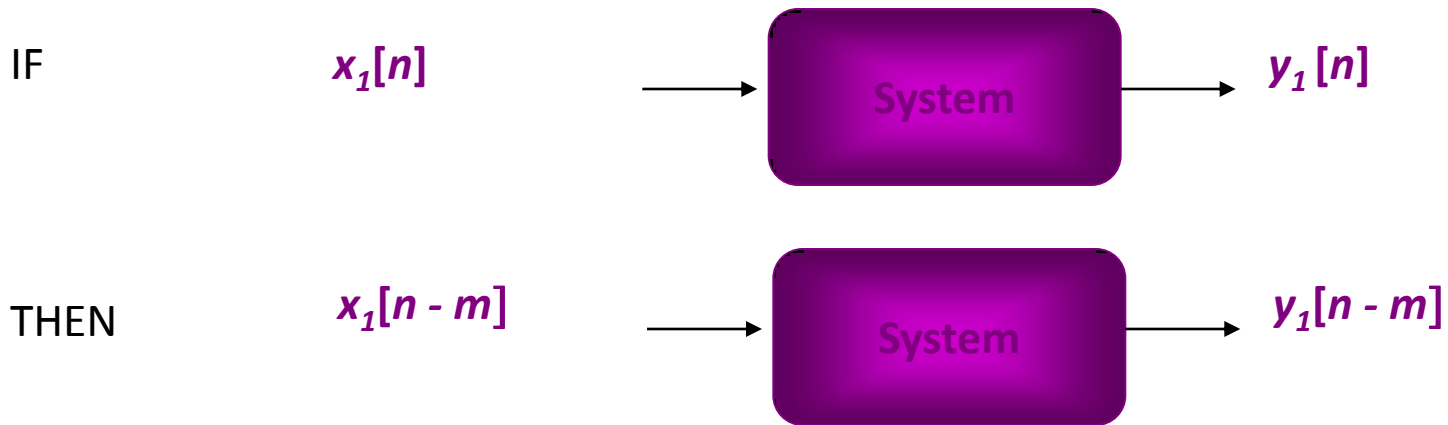
SYSTEM DESCRIPTION

3. Time-invariance: System does not change with time



SYSTEM DESCRIPTION

3. Time-invariance: Discrete signals



SYSTEM DESCRIPTION

4. Stability

The output of a stable system settles back to the quiescent state (e.g., zero) when the input is removed

The output of an unstable system continues, often with exponential growth, for an indefinite period when the input is removed

5. Causality

Response (output) cannot occur before input is applied, ie.,

$$y(t) = 0 \text{ for } t < 0$$