TE201416: SINYAL DAN SISTEM

SISTEM

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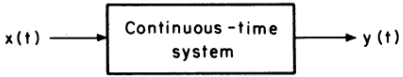
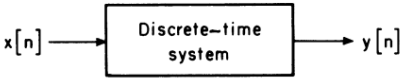
Definisi Sistem



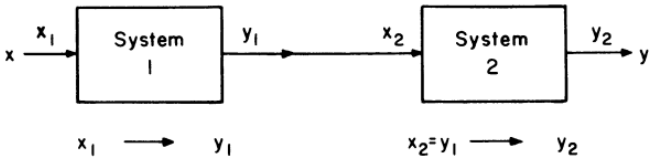
$$x(t) \longrightarrow y(t)$$



$$x[n] \longrightarrow y[n]$$

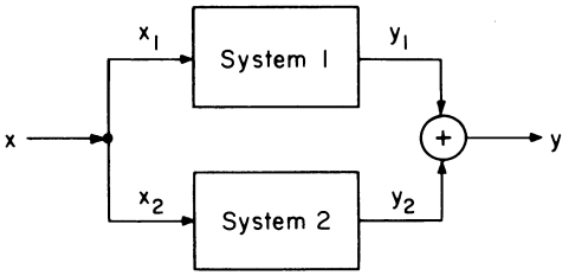
Interkoneksi Antar Sistem

Cascade



Interkoneksi Antar Sistem

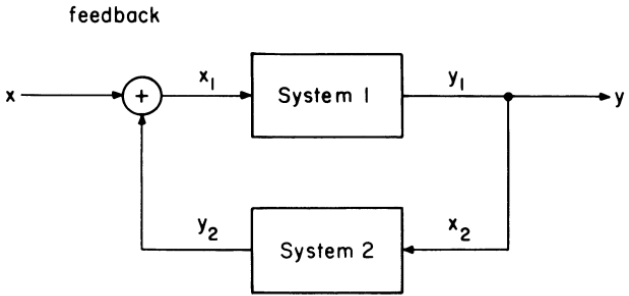
parallel



$x_1 = x_2 = x$

$y = y_1 + y_2$

Interkoneksi Antar Sistem

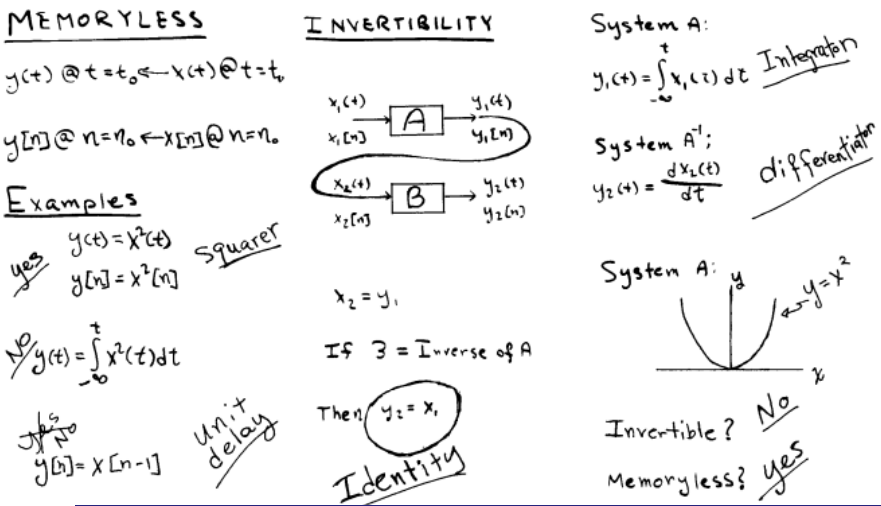


$x_1 = x + y_2$

$y = y_1$

$x_2 = y_1$

Karakteristik Sistem



Karakteristik Sistem

Causality

output at any time depends only on input prior or equal to that time

or:

System can't anticipate "future" inputs

or:

$x_1(t) \longrightarrow y_1(t)$

$x_2(t) \longrightarrow y_2(t)$

If:

$x_1(t) = x_2(t) \quad t < t_0$

Then:

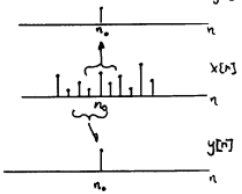
$y_1(t) = y_2(t) \quad t < t_0$

Same for discrete Time

Example:

$y[n] = \frac{1}{3}\{x[n-1] + x[n] + x[n+1]\}$ (not causal)

Moving Average



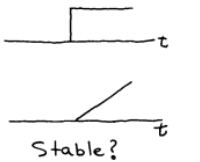
$y[n] = \frac{1}{3}\{x[n-2] + x[n-1] + x[n]\}$ (causal)

Stability

$\Rightarrow$ For every bounded input the output is bounded

Example

$y(t) = \int_{-\infty}^{t} x(\tau)\,d\tau$ not stable



Stable?

Karakteristik Sistem