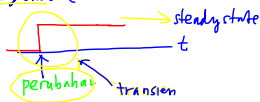


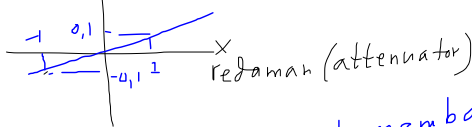
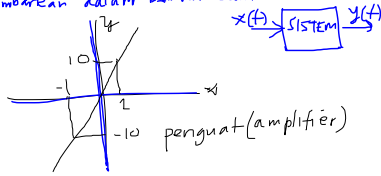
- BAB 1. Pengenalan Sistem Linier**
Bag 1. Pendekatan Sistem Linier
- * **Urutan: Model Sistem**
 - * **Pemodelan STATIK** $\Rightarrow$ **Watak Alih (Transfer Characteristic)**
 - * **Pemodelan DINAMIK**
 - * **Pemodelan Nisbah Alih (Transfer Function)**
 - * **Pemodelan Ruang Keadaan (State Space)**

* Pemodelan STATIK

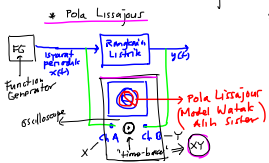
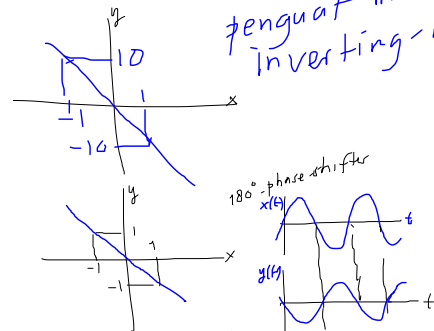
- $\Rightarrow$ **Pemodelan Watak Alih (Transfer Characteristic)**
- $\Rightarrow$ "STATIK", tidak melibatkan parameter waktu t
 - $\Rightarrow$ "steady-state" (keadaan tunak) $\times$ "transien"



* Digambarkan dalam bentuk salib-sumbu



penguat membalik
inverting-amplifier



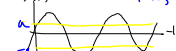
* Lebih bermamfaat untuk model sistem tak linier

$\rightarrow$ Misalnya

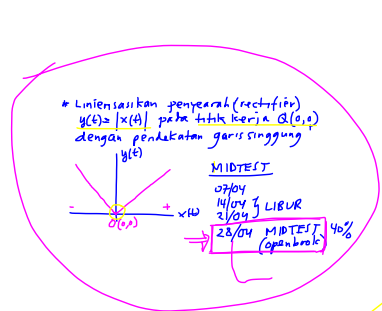
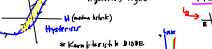
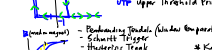
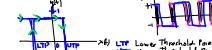
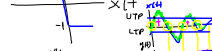
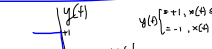


Penguat jenuh (saturating amplifier)

$$y(t) = \begin{cases} Kx(t), & |x(t)| \leq a \\ -Ka, & x(t) > a \\ Ka, & x(t) < -a \end{cases}$$



* Pembandingan (Comparator)



* Linierisasi penyearah (rectifier)

$y(t) \approx |x(t)|$ pada titik kerja $(0,0)$ dengan pendekatan garis singgung



MIDTEST

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14/04 LIBUR

21/04 MIDTEST

28/04 MIDTEST (open book)

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* Transformasi Laplace

$x(t) \rightarrow G(s) \rightarrow y(t)$

Transf Laplace

$X(s) \rightarrow G(s) \rightarrow Y(s)$

Contoh-contoh

* Contoh matematik

* Tentukan $\mathcal{L}\{d(t)\}$

Jawab: $\delta(t) \rightarrow g(t) \rightarrow g(s)$

Transf Laplace

$\mathcal{L}\{\delta(t)\} = \mathcal{L}\{1\} = 1$

* Contoh Rangkaian Listrik:

KONSEP IMPEDANSI

Hukum Ohm

$V(t) = R \cdot I(t)$

$\mathcal{L}\{V(t)\} = \mathcal{L}\{R \cdot I(t)\}$

$V(s) = R \cdot I(s)$

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$\delta(t) = \mathcal{L}^{-1}\{1\}$

$\mathcal{L}\{\delta(t)\} = 1$

$\mathcal{L}\{1\} = 1/s$

$\mathcal{L}\{s\} = 1/s^2$

$\mathcal{L}\{s^2\} = 2/s^3$

$\mathcal{L}\{s^3\} = 6/s^4$

$\mathcal{L}\{s^4\} = 24/s^5$

$\mathcal{L}\{s^5\} = 120/s^6$

$\mathcal{L}\{s^6\} = 720/s^7$

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$\mathcal{L}\{s^8\} = 40320/s^9$

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$\mathcal{L}\{s^{10}\} = 3628800/s^{11}$

$\mathcal{L}\{s^{11}\} = 39916800/s^{12}$

$\mathcal{L}\{s^{12}\} = 479001600/s^{13}$

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$\mathcal{L}\{s^{14}\} = 88261920000/s^{15}$

$\mathcal{L}\{s^{15}\} = 1323928320000/s^{16}$

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