

Linierisasi : $y = f(x)$ $\leftarrow$ Sistem Tak Linier

Persamaan garis singgung = $(y - y_Q) = A(x - x_Q)$

$Q(x_Q, y_Q)$: titik kerja

$$A = \left. \frac{df(x)}{dx} \right|_{(x_Q, y_Q)}$$

$\uparrow$
diharapkan
linier

Contoh : Sistem Tak Linier : $y(t) = 10 \sin[x(t)]$
(Buktikan !)

* Linierisasi pada $Q(0, 0) \leftarrow$

$$y = f(x) = 10 \sin x$$

$$A = \left. \frac{df(x)}{dx} \right|_{x=0} = \left. \frac{d(10 \sin x)}{dx} \right|_{x=0} = 10 \cos x \Big|_{x=0} = 10$$

Pers. garis singgung : $(y - 0) = 10(x - 0) \rightarrow y = 10x$
Hasil linierisasi : $y(t) = 10x(t)$ $\rightarrow$ Sistem Linier