

* Solusi pers. diff dan kestabilan

$$\frac{dx(t)}{dt} = a x(t), \quad x(0) = X_0$$

$$x(t) = \dots ?$$

$a = \text{konstanta skalar}$

$$\int \frac{dx}{x} = \ln x$$

$$\int \frac{dx(t)}{x(t)} = \int a dt = a \int dt = at + K$$

$$\ln [x(t)] = at + K \longrightarrow x(t) = e^{[at+K]}$$
$$x(0) = X_0$$
$$= e^K \cdot e^{at}$$
$$= A e^{at}$$

Solusi

$$x(t) = X_0 e^{at}$$

$$x(0) = A = X_0$$

check:

- * $t=0 \rightarrow x(0) = X_0 \checkmark$
- * $\frac{dx(t)}{dt} = a X_0 e^{at} = a x(t) \checkmark$