$$\frac{dx(t)}{dt} = -2x(t)$$

$\int dx = x$ $\int \frac{dx}{x} = \int \frac{1}{x}\,dx = \ln x$

$= \int x^{-1}\,dx$

$$\int \frac{dx(t)}{x(t)} = \int -2\,dt = -2\int dt = -2t + K$$

$\ln[x(t)]$

$= {}^{e}\log[x(t)]$

$$\ln[x(t)] = -2t + K$$

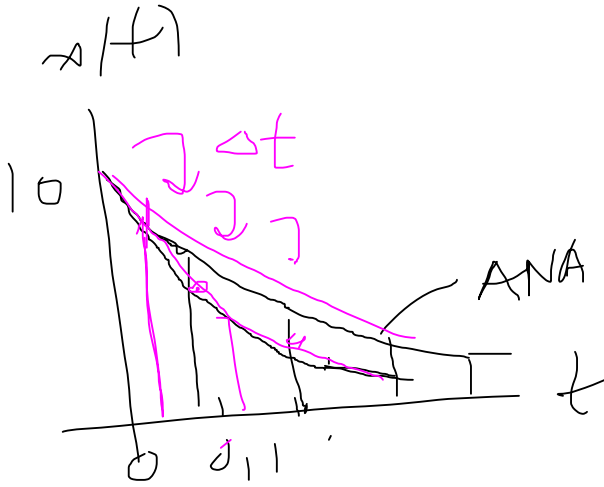
$$x(t) = e^{[-2t+K]}$$

$\leftarrow {}^{e}\log x = a$

$x = e^{a}$

$$= e^{K} e^{-2t}$$

$$x(t) = A e^{-2t} \leftarrow \text{solusi umum}$$



$x(0) = 10 \longrightarrow 10 = A e^{-2(0)} = A$

Solusi: $x(t) = 10 e^{-2t}$ — analitik exact

ANALITIK

t	x(t) ANA
0	10
0,1	$10 e^{-0,2} = 8,18730$
0,2	$10 e^{-0,4} = 6,70320$
⋮	⋮

* $t = 0 \rightarrow x(0) = 10$

* $\frac{dx(t)}{dt} = -2 \cdot 10 e^{-2t} = -2\,x(t)$

NUMERIK (order pertama)

t	x(t) NUM	ERROR
0	10	0
0,1	8,000	0,1873 ←
0,2	6,4	0,3032 ←
	⋮	

Numerik order kedua

t	x(t) NUM	ERROR
0	10	0
0,1	8,2	0,01370
0,2	6,274	0,49...
	⋮	