

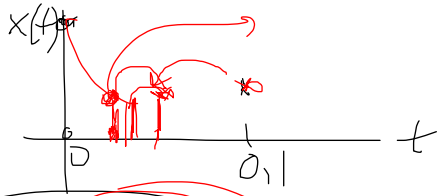
Tugas 3
Tern Diff, $\frac{dx(t)}{dt} = -2x(t)$, $x(0) = 10$
Solusi Analitik $x(t) = 10e^{-2t}$

t	x(t)
0	10
0,1	$10e^{-0,2} \approx 8,187$
0,2	$10e^{-0,4} \approx 6,703$
0,3	$10e^{-0,6} \approx 5,488$
1	dit
2	dit

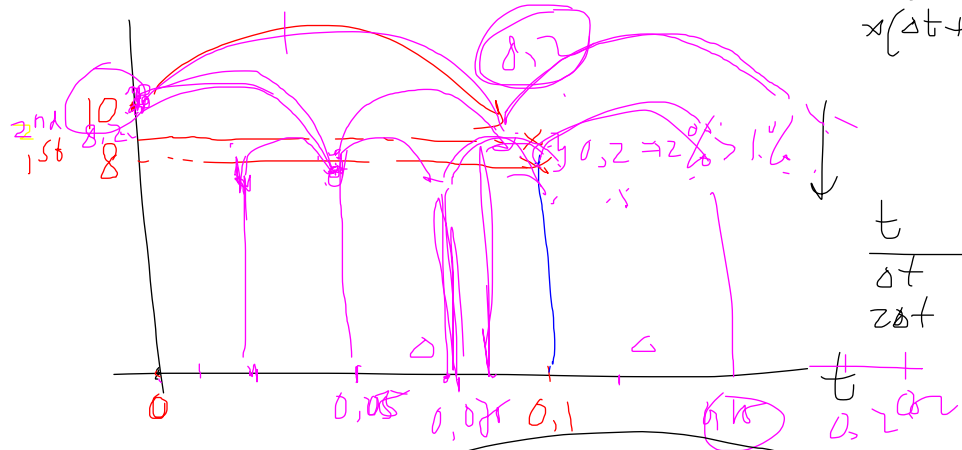
exact

Program Numerik, set toleransi: mrc. 1%

Algoritma: * ket $\Delta t = 0,1$
 $t=0 \rightarrow x(0)=10$
 solusi $x(0,1)$, 1st order = 8,00
 $x/\Delta t$ 2nd order = 8,20
 estimasi error = $|8,20 - 8,00| = 0,2$
 $= \frac{0,2}{10} \times 100\% = 2\% > 1\%$
 $\Delta t = \frac{\Delta t}{n}$ (2) Yes no



solusi $x(\Delta t)$ didapat
 $t = \Delta t \rightarrow x(\Delta t) = \dots$
 $x(\Delta t + \Delta t)$, 1st order = -
 2nd order = -



NUM
x(t)

t	Δt	2nd
0	0,1	8,2

8,2

t	x(t) NUM
0	10
0,1	8,2
0,15	-
0,175	-
0,2	-
0,20	0,12

