1/a $y' = 2y \longleftarrow f(x)$

$y(x) = 1 = \mu_0$

EULER'S ONE STEP METHOD

$\mu_{n+1} = \mu_n + h f(\mu_n), \quad \mu_0 = y_0$

$\longrightarrow \mu_1 = \mu_0 + h 2\mu_0$

$= 1 + 2h$

$\mu_2 = \mu_1 + h2(1+2h)$

$= (1+2h) + 2h(1+2h)$

$= (1+2h)(1+2h)$

$\longrightarrow \mu_n = (1+2h)^n$

$2y = 2e^t$

$y' = \frac{d}{dt} 2e^t = 2e^t \cdot 1$

$= 2e^t$

n	h	μ_n	$y(1) - \mu_n$	$(y(1) - \mu_n)/h$
10	0.1	2.594	0.1245	1.245

$h = 0.1$

$n = 10$

$\mu_{10} = (1+h)^{10}$

$= (1+0.1)^{10}$

$= (1.1)^{10} = 2.594$

$y(1) - \mu_n = e^1 - \mu_{10} = e - 2.594$

$=$

$y(t_1) = e^t$

$\frac{dy(t)}{dt} = e^t$ ✓

$\frac{dy}{dt} = y(t)$

$\frac{d}{dt} e^t = e^t \frac{d(t)}{dt}$