일계미분방정식

모든 문제에서 주어진 미분방정식을 풀어주시면 됩니다. 무슨 미방인지는 비밀입니다.

2-Extra2. 1.

$$(4+t^2)\frac{dy}{dt}+2ty=4t$$

2-Extra2. 2.

$$\frac{dy}{dt}+\frac{1}{2}y=\frac{1}{2}e^{t/3}$$

2-Extra2. 3.

$$\frac{dy}{dt} - 2y = 4 - t$$

2-Extra2. 4.

$$ty' + 2y = 4t^2, y(1) = 2$$

2-Extra2. 5.

$$y' + y = 4\sin 3t$$

2-Extra2. 6.

$$\frac{dy}{dx} = \frac{3x^2 + 4x + 2}{2(y-1)}, \quad y(0) = -1$$

2-Extra2. 7.

$$\frac{dy}{dx} = \frac{4x - x^3}{4 + y^3}$$

2-Extra2. 8.

$$\frac{dy}{dx} = \frac{2x^2 + xy + y^2}{x^2}$$

2-Extra2. 9.

$$\frac{dy}{dx} = \frac{x^2 - 4y^2}{2xy}$$

2-Extra2. 10.

$$(e^x \sin y - 3y \sin x) + (e^x \cos y + 3 \cos x)y' = 0$$

2-Extra2. 11.

$$(9x^2 + y - 1) - (4y - x)y' = 0$$

2-Extra2. 12.

$$2xy^3 + (1 + y^2)y' = 0$$

2-Extra2. 13.

$$y' = e^{3x} + y - 1$$

2-Extra2. 14.

$$(4x/y^2 + 3/x^2y) + (3/xy^2 + 2y/x^2)y' = 0$$

2-Extra2. 15.

$$(4 + 3/x) + (6y/x - 1/x)y' = 0$$

2-Extra2. 16.

$$\left(\frac{\sin y}{y} - 3e^{-x}\sin x\right) + \left(\frac{\cos y + 3e^{-x}\cos x}{y}\right)y' = 0$$

단, $\mu(x, y) = ye^x$가 합리적인 후보로 보인다는 소문이 있다.

2-Extra2. 17.

$$t^2y' + 2ty - y^3 = 0, \quad t > 0$$

2-Extra2. 18.

$$\frac{dy}{dt} = (\cos t + 1)y - y^3$$

단, 근을 표시할 때는 $f(t) = \int_0^t e^{2\sin s + 2s} ds$*를 이용하여라.*

2-Extra2. 19.

$$y' = 1 + t^2 - 2ty + y^2$$

2-Extra2. 20.

$$\frac{dy}{dt} = \frac{2\cos^2 t - \sin^2 t + y^2}{2\cos t}, \quad y_1(t) = \sin t$$