

$$yy' = 2y - x$$

$$y' + \frac{2y}{x} = \frac{e^{-x^2}}{x}$$

$$y' \cos x - y \sin x = \sin 2x$$

$$xy' \cos\left(\frac{y}{x}\right) = y \cos\left(\frac{y}{x}\right) - x$$

$$xy' + y = \ln x + 1$$

$$xy' = y\left(1 + \ln \frac{y}{x}\right)$$

$$yy'' + y'^2 = 0$$

$$y'' \operatorname{tg} y = 2(y')^2$$

$$y'' - 4y' + 5y = \frac{e^{2x}}{\cos x}$$

$$y'' - 2y' + y = x^{-2}e^x$$

$$y'' + y = \operatorname{tg} x$$

$$y'' + y' = \frac{1}{1 + e^x}$$

$$y'' + 4y' + 4y = \frac{e^{-2x}}{x^3}$$

$$y'' + y = \frac{1}{\cos^3 x}$$

$$y'' + 2y' - 3y = x^2 e^x$$

$$y'' - 2y' + y = 6xe^x$$

$$y'' - 5y' = 3x^2 + \sin 5x$$

$$y'' + y = x \sin x$$