

$$y' = x \cdot e^y$$

$$\frac{dy}{dx} = x \cdot e^y$$

$$\frac{dy}{e^y} = x \cdot dx$$

$$\int e^y \cdot dy = \int x \cdot dx$$

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

$$\ln e^y = \ln \left(\frac{x^2}{2} + C \right)$$

$$y = \ln \left(\frac{x^2}{2} + C \right)$$

$$y' = 3x^2 e^y \quad y(0) = \ln(4)$$

$$\frac{dy}{dx} = 3x^2 e^y$$

$$\frac{dy}{e^y} = 3x^2 dx$$

$$\int e^y dy = \int 3x^2 dx$$

$$e^y = \frac{3x^3}{3} + C$$

$$\ln e^y = \ln (x^3 + C)$$

$$y = \ln (x^3 + C)$$

$$\ln(4) = \ln(0^3 + C) \quad / \ln$$

$$4 = 0^3 + C$$

$$C = 4$$