Answer on Question #58168 – Math – Calculus

Question

Let $y^6 + x^2 * y^5 = e^{4*x}$. Then

$$\frac{dy}{dx} - ?$$

Solution

$$6 * y^5 * \frac{dy}{dx} + 2 * x * y^5 * \frac{dx}{dx} + x^2 * 5 * y^4 * \frac{dy}{dx} = 4 * e^{4*x} * \frac{dx}{dx},$$

$$\frac{dx}{dx} = 1,$$

$$6 * y^5 * \frac{dy}{dx} + 5 * x^2 * y^4 * \frac{dy}{dx} = 4 * e^{4*x} - 2 * x * y^5$$

$$\frac{dy}{dx} * (6 * y^5 + 5 * x^2 * y^4) = 2 * (2 * e^{4*x} - x * y^5)$$

$$\frac{dy}{dx} = \frac{2 * (2 * e^{4*x} - x * y^5)}{y^4 * (6 * y + 5 * x^2)}$$

Answer:

$$\frac{dy}{dx} = \frac{2 * (2 * e^{4*x} - x * y^5)}{y^4 * (6 * y + 5 * x^2)}$$