ANSWER on Question #77975 – Math – Differential Equations

QUESTION

The order of differential equation

$$\frac{d^2y}{dx^2} + 2 \cdot \frac{dy}{dx} \cdot \frac{d^3y}{dx^3} + x = 0 \quad is \quad \_\_\_\_\_$$

$$(a)\ 1 \quad (b)\ 3 \quad (c)\ 4 \quad (d)\ 2$$

SOLUTION

By the definition, the order of a differential equation is the order of the highest order derivative present in the equation.

In our case,

$$\frac{d^2y}{dx^2} + 2 \cdot \frac{dy}{dx} \cdot \frac{d^3y}{dx^3} + x = 0 \quad is\ third\ order\ since\ the\ higest\ direvative\ is\ \frac{d^3y}{dx^3}.$$

Conclusion, the order of the differential equation

$$\boxed{\frac{d^2y}{dx^2} + 2 \cdot \frac{dy}{dx} \cdot \frac{d^3y}{dx^3} + x = 0 \quad is \quad (b)\ 3}$$

ANSWER: $(b)\ 3$