

Differential Equation - Class XII

Related Questions with Solutions

Questions

Question: 01

The solution of the differential equation, $(x + 2y^3) \frac{dy}{dx} = y$ is :

- A. $\frac{x}{y^2} = y + c$
B. $\frac{x}{y} = y^2 + c$
C. $\frac{x^2}{y} = y^2 + c$
D. $\frac{y}{x} = x^2 + c$

Solutions

Solution: 01

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

$$\frac{dx}{dy} - \frac{1}{y}x = 2y^2 \text{ which is linear}$$

$$\text{I.F. } e^{\int -\frac{1}{y} dy} = e^{-\ln y} = \frac{1}{y}$$

$$\therefore \frac{1}{y} \cdot x = \int \frac{1}{y} \cdot 2y^2 dy = y^2 + c$$

$$\therefore \frac{x}{y} = y^2 + c$$

Correct Options

Answer:01

Correct Options: B