

miramaldives



1. $\frac{1}{x} \frac{d}{dx} \left(x^2 \frac{dy}{dx} \right) + \frac{1}{x} \frac{dy}{dx} = 0$ $\Rightarrow$ $x^2 \frac{dy}{dx} = C_1$ $\Rightarrow$ $\frac{dy}{dx} = \frac{C_1}{x^2}$ $\Rightarrow$ $y = -\frac{C_1}{x} + C_2$
2. $\frac{1}{x} \frac{d}{dx} \left(x^2 \frac{dy}{dx} \right) + \frac{1}{x} \frac{dy}{dx} = \frac{1}{x}$ $\Rightarrow$ $x^2 \frac{dy}{dx} = C_1 x + C_2$ $\Rightarrow$ $\frac{dy}{dx} = \frac{C_1}{x} + \frac{C_2}{x^2}$ $\Rightarrow$ $y = C_1 \ln x - \frac{C_2}{x} + C_3$
3. $\frac{1}{x} \frac{d}{dx} \left(x^2 \frac{dy}{dx} \right) + \frac{1}{x} \frac{dy}{dx} = \frac{1}{x^2}$ $\Rightarrow$ $x^2 \frac{dy}{dx} = C_1 x + C_2 - \frac{1}{x}$ $\Rightarrow$ $\frac{dy}{dx} = \frac{C_1}{x} + \frac{C_2}{x^2} - \frac{1}{x^3}$ $\Rightarrow$ $y = C_1 \ln x - \frac{C_2}{x} + \frac{1}{2x^2} + C_3$
4. $\frac{1}{x} \frac{d}{dx} \left(x^2 \frac{dy}{dx} \right) + \frac{1}{x} \frac{dy}{dx} = \frac{1}{x^3}$ $\Rightarrow$ $x^2 \frac{dy}{dx} = C_1 x + C_2 - \frac{1}{2x^2}$ $\Rightarrow$ $\frac{dy}{dx} = \frac{C_1}{x} + \frac{C_2}{x^2} - \frac{1}{2x^4}$ $\Rightarrow$ $y = C_1 \ln x - \frac{C_2}{x} + \frac{1}{6x^3} + C_3$
5. $\frac{1}{x} \frac{d}{dx} \left(x^2 \frac{dy}{dx} \right) + \frac{1}{x} \frac{dy}{dx} = \frac{1}{x^4}$ $\Rightarrow$ $x^2 \frac{dy}{dx} = C_1 x + C_2 - \frac{1}{3x^3}$ $\Rightarrow$ $\frac{dy}{dx} = \frac{C_1}{x} + \frac{C_2}{x^2} - \frac{1}{3x^5}$ $\Rightarrow$ $y = C_1 \ln x - \frac{C_2}{x} + \frac{1}{12x^4} + C_3$

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