

Centum Preparation 100 Days plan class 12 Maths

Q.N o.	DAY - 68
424	<p>Example 10.10</p> <p>Show that $y = a \cos(\log x) + b \sin(\log x), x > 0$ is a solution of the differential equation $x^2 y'' + xy' + y = 0$.</p>
425	<p>7. Show that the differential equation representing the family of curves $y^2 = 2a \left(x + a^{\frac{2}{3}} \right)$, where a is a positive parameter, is</p> $\left(y^2 - 2xy \frac{dy}{dx} \right)^3 = 8 \left(y \frac{dy}{dx} \right)^5.$
426	<p>Example 10.12</p> <p>Find the particular solution of $(1 + x^3) dy - x^2 y dx = 0$ satisfying the condition $y(1) = 2$.</p>
427	<p>Example 10.14</p> <p>Solve : $\frac{dy}{dx} = \sqrt{4x + 2y - 1}$.</p>
428	<p>2. The velocity v, of a parachute falling vertically satisfies the equation $v \frac{dv}{dx} = g \left(1 - \frac{v^2}{k^2} \right)$, where g and k are constants.</p> <p>If v and x are both initially zero, find v in terms of x.</p>

4. Solve the following differential equations:

(ii) $ydx + (1 + x^2) \tan^{-1} x \, dy = 0$

(iv) $\frac{dy}{dx} = e^{x+y} + x^3 e^y$

(vi) $(ydx - xdy) \cot\left(\frac{x}{y}\right) = ny^2 dx$

(viii) $x \cos y \, dy = e^x (x \log x + 1) dx$