$$m^2 + 10m + 25 = 0$$

$$m_1 = -5 \qquad m_2 = -5$$

CASO II

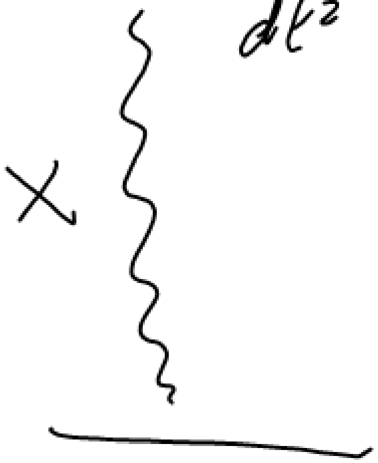
Sol. 1 = $y = e^{-5t}$

Sol 2 = $y = te^{-5t}$

sol. 1 ⇒ $x(t) = e^{-5t}$

sol 2 ⇒ $x(t) = te^{-5t}$

$$\frac{d^2x(t)}{dt^2} - 10\frac{dx}{dt} + 25x(t) = 20e^{-5t}$$



4)

$$dx_1(t) = x_2(t)$$

$$\frac{dx_2(t)}{dt} = -25x_1(t) - 10x_2(t) + 20e^{-5t},$$

$$\begin{bmatrix} 1 & 0 \\ 10 & 25 \end{bmatrix}$$

$$y(x)^2 \cdot \left(1 - y(x)\right) = \left(x - C_1\right)^2$$

$$\sqrt{y^2 - y^3} = x - C_1$$

$$\boxed{x - \sqrt{y^2 - y^3} = C_1}$$

$$F(x, y) = C_1$$

$$\frac{\partial F}{\partial x} + \frac{\partial F}{\partial y} \cdot \frac{dy}{dx} = 0$$

$$1 - \frac{\partial}{\partial y}\left(y^2 - y^3\right)^{1/2} \cdot \frac{dy}{dx} = 0$$

$$1 - \frac{1}{2}\left(y^2 - y^3\right)^{-1/2} \cdot \left(2y - 3y^2\right) \cdot \frac{dy}{dx} = 0$$

$$1 - \frac{(2y - 3y^2)}{2\sqrt{y^2 - y^3}} \cdot \frac{dy}{dx}$$

$$M = 1 \qquad \frac{\partial M}{\partial y} = 0$$

$$N = -\frac{(2y - 3y^2)}{2\sqrt{y^2 - y^3}} \qquad \frac{\partial N}{\partial x} = 0$$

EXACTA.

$$y(x) = \frac{C_1}{x^2} + \frac{C_2}{x^3}$$

EDO(2) L CV H.

$$\left\{\begin{array}{ll} x^n & n \in \mathbb{Z}^{+} \\ e^{ax} & a \in \mathbb{R} \\ \cos(bx),\ \operatorname{sen}(bx) & b \in \mathbb{R}^{+} \end{array}\right.$$

$$\frac{dy}{dx} = \frac{d}{dx} C_1 x^{-2} + \frac{d}{dx} C_2 x^{-3}$$

$$= C_1(-2x^{-3}) + C_2(-3x^{-4})$$

$$\frac{d^2y}{dx^2} = C_1(6x^{-4}) + C_2(12x^{-5})$$

$$\begin{bmatrix} -2x^{-3} & -3x^{-4} \\ 6x^{-4} & 12x^{-5} \end{bmatrix} \begin{bmatrix} C_1 \\ C_2 \end{bmatrix} = \begin{bmatrix} \frac{dy}{dx} \\ \frac{d^2y}{dx^2} \end{bmatrix}$$

$$\left| \quad \right| = -24x^{-8} - (-18x^{-8})$$

$$= -6x^{-8}$$

$$C_1 = \frac{\begin{vmatrix} \frac{dy}{dx} & -3x^{-4} \\ \frac{d^2y}{dx^2} & 12x^{-5} \end{vmatrix}}{-6x^{-8}} \Rightarrow \frac{12x^{-5}\frac{dy}{dx} + 3x^{-4}\frac{d^2y}{dx^2}}{-6x^{-8}}$$

$$C_1 = -2x^3\frac{dy}{dx} - \frac{1}{2}x^4\frac{d^2y}{dx^2}$$

$$C_2 = \frac{\begin{vmatrix} -2x^{-3} & \frac{dy}{dx} \\ 6x^{-4} & \frac{d^2y}{dx^2} \end{vmatrix}}{-6x^{-8}} \Rightarrow \frac{-2x^{-3}\frac{d^2y}{dx^2} - 6x^{-4}\frac{dy}{dx}}{-6x^{-8}}$$

$$C_2 = \frac{1}{3}x^5\frac{d^2y}{dx^2} + x^4\frac{dy}{dx}$$

$$y = \frac{-2x^3\frac{dy}{dx} - \frac{1}{2}x^4\frac{d^2y}{dx^2}}{x^2} + \frac{\frac{1}{3}x^5\frac{d^2y}{dx^2} + x^4\frac{dy}{dx}}{x^3}$$

$$y = -2x\frac{dy}{dx} - \frac{1}{2}x^2\frac{d^2y}{dx^2} + \frac{1}{3}x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx}$$

$$y = \left(-\frac{1}{2}+\frac{1}{3}\right)x^2\frac{d^2y}{dx^2} + (-2+1)x\frac{dy}{dx}$$

$$\frac{y}{-\frac{1}{6}x^2} = \frac{d^2y}{dx^2} + \frac{-x}{-\frac{1}{6}x^2}\frac{dy}{dx}$$

$$\boxed{\frac{d^2y}{dx^2} + \frac{6}{x}\frac{dy}{dx} + \frac{6y}{x^2} = 0}$$

$$Ecuacion := \frac{6\,y(x)}{x^2} + \frac{d^2}{dx^2}\,y(x) + \frac{6\left(\frac{d}{dx}\,y(x)\right)}{x} = 0$$