

REPASO

DISTINGUIR

{ SOLUCIÓN GRAL
 SOLUCIÓN PARTICULAR
 SOLUCIÓN SINGULAR

EDO(1)NL

||| { SG

||| { SP.

||| { SS.

$$E \text{ DO}(1)_{NL}$$

$$M + N \frac{dy}{dx} = 0$$

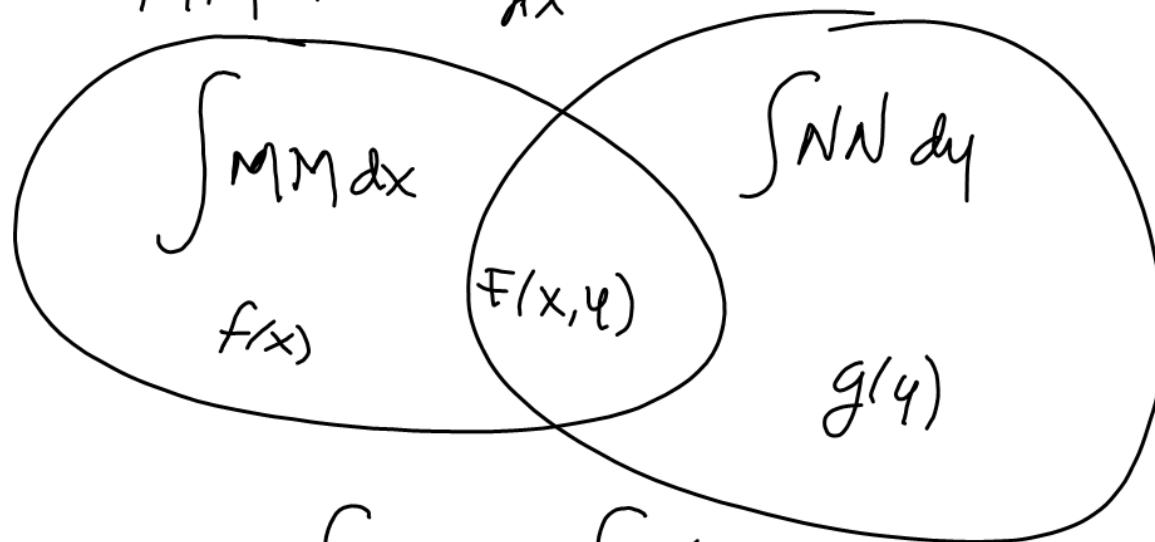
$$(1 - x^2 y) + x^2 (y - x) \frac{dy}{dx} = 0$$

$$\frac{\partial M}{\partial y} = -x^2$$

$$\frac{\partial N}{\partial x} = 2xy - 3x^2$$

$$\frac{\partial M}{\partial y} \neq \frac{\partial N}{\partial x} \quad \text{No EXACTA.}$$

$$M dx + N dy = 0$$



$$\text{SOL GRAL} = \underbrace{\int M dx}_{F(x, y) + f(x)} + \underbrace{\int \left(N - \frac{d}{dy} \left(\int M dx \right) \right) dy}_{g(y)} = C$$

$$\frac{d^2 y}{dx^2} + a_1 \frac{dy}{dx} + a_2 y = Q(x)$$

$$\frac{d^2 y}{dx^2} + a_1 \frac{dy}{dx} + a_2 y = 0$$

$$m^2 + a_1 m + a_2 = 0 \quad \left\{ \begin{array}{l} m_1 \\ m_2 \end{array} \right.$$

$$\left\{ \begin{array}{l} y_{g/h} = C_1 e^{m_1 x} + C_2 e^{m_2 x} \quad m_1 \neq m_2 \end{array} \right.$$

$$\left\{ \begin{array}{l} y_{g/h} = C_1 e^{m_1 x} + C_2 x e^{m_1 x} \quad m_1 = m_2 \end{array} \right.$$

$$\left\{ \begin{array}{l} y_{g/h} = C_1 e^{ax} \cos(bx) + C_2 e^{ax} \sin(bx) \quad \begin{array}{l} m_1 = a + bi \\ m_2 = a - bi \end{array} \end{array} \right.$$

$$\begin{bmatrix} e^{m_1 x} & e^{m_2 x} \\ m_1 e^{m_1 x} & m_2 e^{m_2 x} \end{bmatrix} \begin{bmatrix} A'(x) \\ B'(x) \end{bmatrix} = \begin{bmatrix} 0 \\ Q(x) \end{bmatrix}$$

$$y_g = A'(x) e^{m_1 x} + B'(x) e^{m_2 x}$$

$$\frac{d^2 x}{dt^2} + 2 \frac{dx}{dt} + x = 3e^{-t} + 4te^{-t}$$

$$x(t) = \frac{2}{3} \frac{t^3}{e^t} + \frac{3}{2} \frac{t^2}{e^t} + \frac{C1}{e^t} + \frac{t C2}{e^t}$$

$$x(t) = c_1 e^{-t} + c_2 t e^{-t} + \frac{3}{2} t^2 e^{-t} + \frac{2}{3} t^3 e^{-t}$$

$$\frac{dy}{dt} + p y = q.$$

$$y = c_1 e^{-\int p dt} + e^{-\int p dt} \int e^{\int p dt} q dt.$$

$$m = -5$$

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$$(m+5)(m+5)=0$$