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EDO - Capítulo 6

Ex. 6.1) $2x + y^2 + 2xy \frac{dy}{dx} = 0$

$$M(x,y) + N(x,y) \frac{dy}{dx} = 0$$

$$\psi(x,y) = x^2 + xy^2$$

$$\frac{\partial \psi}{\partial x} = M(x,y), \quad \frac{\partial \psi}{\partial y} = N(x,y)$$

$$M(x,y) = 2x + y^2 =$$

$$N(x,y) = 2xy$$

$$\frac{\partial \psi}{\partial y} = 2yx = \frac{\partial \psi}{\partial x} = 2x + y^2 \quad \text{e é exata}$$

Ex) 6.2) $\frac{\partial \psi}{\partial x} + \frac{\partial \psi}{\partial y} \frac{dy}{dx} = 0 \quad \psi(x,y) = C$

$$M(x,y) \quad N(x,y)$$

$$\int \frac{\partial \psi}{\partial x} dx = \int 0 \Rightarrow \psi(x,y) = C$$

Ex 6.3) $M_y(x,y) = N_x(x,y)$

$$M(x,y) + N(x,y) \frac{dy}{dx} = 0$$

$$\psi_x = N(x,y) \quad (a)$$

$$\psi_y = M(x,y) \quad (b)$$

$$(a) = \psi_x = \int M(x,y) dx + g(y) \quad C$$

$$(a) \text{ e } (b) = N(x,y) = \frac{\partial}{\partial y} \left(\int M(x,y) dx + g(y) \right)$$