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EDO - Capítulo 7)

Exemplo 7.1) $(3xy + y^2) + (x^2 + xy)\frac{dy}{dx} = 0$

$g(x) = \frac{1}{N}(M_y - N_x)$

$g(x) = \frac{3x + 2y - 2x - y}{x^2 + xy} = \frac{x + y}{x(x+y)} = \frac{1}{x}$

$e^{\int \frac{1}{x} dx} = e^{\ln|x|} = x$ //

$(3x^2y + y^2x) + (x^3 + x^2y)\frac{dy}{dx}$

$\psi(x,y) = \int 3x^2y + y^2x \, dx = x^3y + \frac{x^2y^2}{2} + h(y)$

$\psi(x,y)_y = x^3 + x^2y + h' = x^3 + x^2y \quad h(y) = 0 \quad h = 0$

$\psi(x,y) = x^3y + \frac{x^2y^2}{2} + C$ //

Exemplo 7.2) $(3xy + y^2) + (x^2 + xy)y' = 0$

$\mu(x,y) = \frac{1}{xy(2x+y)}$

$\frac{3xy + y^2}{xy(2x+y)} + \frac{x^2 + xy}{xy(2x+y)}$

$\frac{y(3x+y)}{yx(2x+y)} = \frac{3x+y}{x(2x+y)} + \frac{x+y}{y(2x+y)}$

$M = \frac{3x+y}{x(2x+y)} \qquad M_y = \frac{x(2x+y)x - (3x+y)\cdot x}{(x(2x+y))^2}$

$N = \frac{x+y}{y(2x+y)} \qquad N_x = \frac{y(2x+y) - (2y)(x+y)}{y(2x+y)^2}$ //

7.3) 100 gal de sol com 0,1 lb de sal

Tempo = min = (T)	PVI em
Quantidade de água = gal	

$$\frac{dQ}{dT} = \pi_1 - \pi_2 \cdot Q(T)$$

$$\frac{dQ}{dT} + \frac{4}{100} = \frac{}{}$$

para $Q(0) = Q_0$

$$\begin{cases} \frac{dQ}{dT} + \frac{\pi}{100} Q_0 = \pi_1 \\ Q(0) = Q_0 \end{cases}$$

$Q(1) = 25$ libras