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EDO - Capítulo 7)

Exemplo 7.1) $(3xy + y^2) + (x^2 + xy) dy = 0$

$$g(x) = \frac{1}{N} M_y - M_x \quad \frac{dy}{dx}$$

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

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

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

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

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

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

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

$$u(x,y) = 1$$

$$xy(2x+y)$$

$$3xy + y^2 + x^2 + xy$$

$$xy(2x+y) \cdot xy(2x+y)$$

$$y(3x+y) = 3x+y + x+y$$

$$yx(2x+y) \quad x(2x+y) \quad y(2x+y)$$

$$M = 3x+y \quad M_y = x(2x+y) - (3x+y) \cdot x$$

$$x(2x+y) \quad (x(2x+y))^2$$

$$N = x+y \quad N_x = y(2x+y) - (2y)(x+y)$$

$$y(2x+y) \quad y(2x+y)^2 //$$

7.3) 100 gal de solução com 20 lb de sal por gal

Tempo = min = (T)

PV = em 100 - 000

Quantidade de água = gal

$$100 \text{ gal} \times 46 \text{ lb} + 50 \text{ lb} (5 \text{ gal} + 4 \text{ gal}) \quad (\text{L.F. de } 100 \text{ gal})$$

$$dQ = \pi - \pi \cdot Q(t)$$

$$\frac{dQ}{dt} + 4Q = 100 \quad 100 = 4 - 4Q = 4(1 - Q)$$

para $Q(0) = Q_0$

$$\frac{dQ}{dt} + 4Q = 100$$

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$$Q(0) = Q_0$$

$$Q(4) = 25 \text{ libras/gal}$$

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$$0 = 1(4x + 5) + (5 + 4x)(5) \quad (\text{Exemplo 7.3})$$

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$$(4x + 5)(5)$$

$$4x + 5 = 4x + 5$$

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