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GOO - Cop. 'tulo 7

$$19) x^2 y^3 + (1 + y^2) x y' = 0 \quad \mu(x, y) = 1$$

$$M = x^2 y^3 \quad M_y = 3x^2 y^2 \quad N = x y^3$$

$$N_x = 1 + y^2$$

$$\frac{x^2 y^3}{x y^3} + \frac{(1 + y^2) x y'}{x y^3} = \frac{56^5 x}{x} = 113514$$

$$M = x \quad M_y = 1$$

$$N = x + y^2 x \quad N_x = 1$$

$$\frac{x y^3}{x y^3} = 1$$

$$\psi(x, y) = \frac{x^2}{2} + h(y) \quad h'(y) = \frac{1}{y^3} + \frac{1}{y} = 0$$

$$\psi(x, y) = \frac{x^2}{2} + \frac{1}{y^3} + \frac{1}{y} = C //$$

$$20) \left( \frac{\sin y}{y} - 2e^{-x} \sin x \right) dx + \left( \cos y + \frac{2e^{-x} \cos x}{y} \right) dy$$

$$\mu(x, y) = y e^x$$

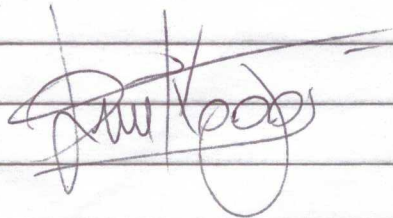
$$M_y = \frac{\sin y}{y} - 2e^{-x} \sin x \quad N_x = -2e^{-x} (\cos x + \sin x)$$

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

$$\int e^x \cos y + 2 \cos x dy = \psi(x, y)$$

$$\psi = e^x \sin y - 2y \cos x + h(x) = M \Rightarrow h'(x) = 0$$

$$e^x \sin y + 2 \cos x dy = C //$$



$$21) y dx + (2x - ye^y) dy = 0 \quad \mu(x,y) = y$$

$$M = y \quad M_y = 1$$

$$N = 2x - ye^y \quad N_x = 2$$

$$y^2 + (2xy - y^2 e^y)$$

$$M = y^2 = (y, x) \quad M_y = 2y(2x+1) + e^y x (1)$$

$$N = 2xy - y^2 e^y \quad N_x = 2y$$

$$\psi(x,y) = \int y^2 dx = y^2 x + h(y)$$

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

$$h(y) = 2xy + 2x - ye^y$$

$$M = y^2 x + 2xy - ye^y - e^y + y^2 x$$

$$C = 2xy - ye^y - e^y$$

$$22) (x+2) \sin y dx + x \cos y dy = 0 \quad \psi(x,y) = 1$$

$$M = (x+2) \sin y \quad M_y = \cos y x + 2 \cos y$$

$$N = x \cos y \quad N_x = \cos y$$

$$(y x + 2) \sin y + y/x \cos y$$

$$M_y = N_x$$