EDO(1) NL

$$\frac{dy}{dx} = f(x, y)$$

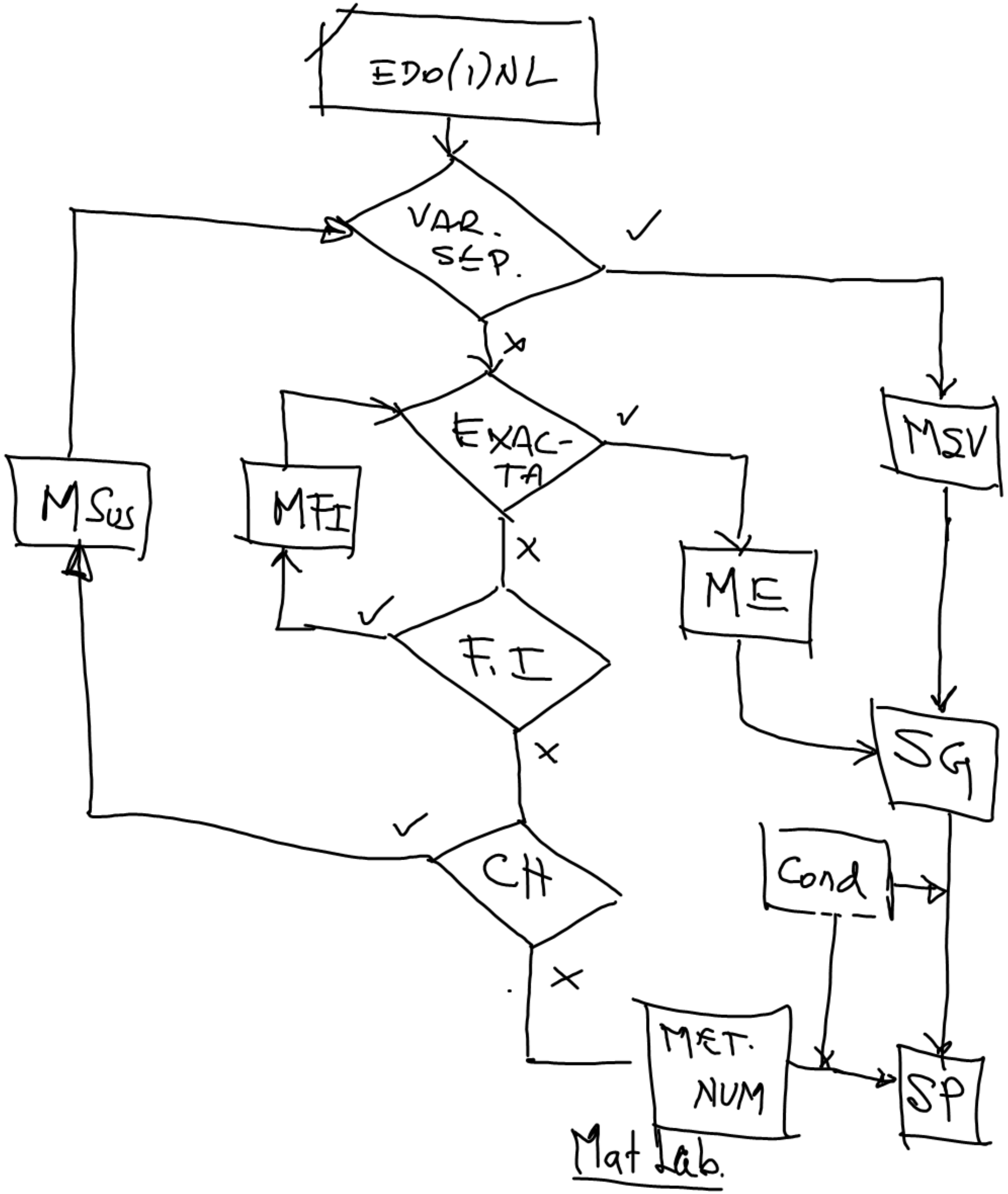
$$\frac{dy}{dx} = -\frac{M(x,y)}{N(x,y)}$$

$$N\frac{dy}{dx} = -M$$

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

FORMA GENERAL

PROCEDIMIENTO SOLUCIÓN
EDO(1)NL



MÉTODO DE VARIABLES SEPARABLES.

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

$$P(x)\cdot Q(y) + R(x)\cdot S(y)\cdot\frac{dy}{dx} = 0$$

multiplicamos

$$\left(\frac{1}{Q(y)R(x)}\right)$$

$$\frac{P(x)\cancel{Q(y)}}{\cancel{Q(y)}R(x)} + \frac{\cancel{R(x)}S(y)}{Q(y)\cancel{R(x)}}\frac{dy}{dx} = 0$$

$$\frac{P(x)}{R(x)} + \frac{S(y)}{Q(y)}\cdot\frac{dy}{dx} = 0$$

mult. dx

$$\frac{P(x)}{R(x)}dx + \frac{S(y)}{Q(y)}\cdot\frac{dy}{dx}\cdot dx = 0$$

$$\frac{P(x)}{R(x)}dx + \frac{S(y)}{Q(y)}dy = 0$$

$$\frac{S(y)}{Q(y)}dy = -\frac{P(x)}{R(x)}dx$$

$$\int\frac{S(y)}{Q(y)}dy = -\int\frac{P(x)}{R(x)}dx$$

$$\left[\int\frac{S(y)}{Q(y)}dy\right] + C_1 = \left[-\int\frac{P(x)}{R(x)}dx\right] + C_2$$

$$\left[\int\frac{S(y)}{Q(y)}dy\right] + \left[\int\frac{P(x)}{R(x)}dx\right] = C_2 - C_1$$

$$\boxed{F(x,y) = C}$$ SG EDO(1)NL

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

Variables Separables. EDO(1)NL.

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

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

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

$$R(x)\,S(y)\cdot\frac{dy}{dx} + P(x)\,Q(y) = 0$$

$$\frac{1}{R(x)Q(y)} \qquad \frac{(1+x)y^2}{(1+x)(1-y)}\left(\frac{dy}{dx}\right) + \frac{x^2(1-y)}{(1+x)(1-y)} = 0$$

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

$$\frac{y^2}{1-y}\cdot\frac{dy}{dx} = -\frac{x^2}{1+x}$$

$x^2 \;\big|\; 1+x$

$-x^2 - x \qquad x - 1$

$0 \; -x$

$+x \; +1$

$0 \quad 1$

$y^2 \;\big|\; 1-y$

$-y^2 + y \qquad -y - 1$

$0 \quad y$

$-y + 1$

$$\frac{y^2}{1-y}\,dy = -\frac{x^2}{1+x}\,dx$$

$$\int\frac{y^2}{1-y}\,dy = -\int\frac{x^2}{1+x}\,dx$$

$$-\int y\,dy - \int dy - \int\frac{-dy}{1-y} = -\left(\int x\,dx - \int dx + \int\frac{dx}{1+x}\right)$$

$$-\frac{y^2}{2} - y - L(1-y) + C_1 = -\frac{x^2}{2} + x - L(1+x) + C_2$$

$$\boxed{-\frac{y^2}{2} - y - L(1-y) + \frac{x^2}{2} - x + L(1+x) = C}$$

$$SolGral := y + \frac{1}{2}y^2 + \ln(-1+y) - \frac{1}{2}x^2 + x - \ln(1+x) = C$$

$$\boxed{-\frac{y^2}{2} - y - L(1-y) + \frac{x^2}{2} - x + L(1+x) = C_1}$$

$$\frac{y^2}{1-y} = -y - 1 + \frac{1}{1-y}$$

$$\begin{array}{r|l} & -y-1 \\ \hline -y+1 & y^2 \\ & -y^2+y \\ \hline & 0 \quad y \\ & -y+1 \end{array}$$

$$3e^{x}\tan(y)+(2-e^{x})\sec^2(y)\frac{dy}{dx}=0$$

$$\frac{3e^{x}}{2-e^{x}}dx+\frac{\sec^2(y)}{\tan(y)}dy=0$$

$$-3\int\frac{-e^{x}}{(2-e^{x})}dx+\int\frac{\sec^2(y)}{\tan(y)}dy=0$$

$$-3\ln(2-e^{x})+\ln(\tan(y))=C$$

$$\ln(2-e^{x})^{-3}+\ln(\tan(y))=C$$

$$\ln\left(\frac{1}{(2-e^{x})^3}\right)+\ln(\tan(y))=C$$

$$\ln\left(\frac{\tan(y)}{(2-e^{x})^3}\right)=C$$

$$\frac{\tan(y)}{(2-e^{x})^3}=e^{C}$$

$$\tan(y)=C(2-e^{x})^3$$

$$\boxed{y=\arg\tan\left(C(2-e^{x})^3\right)}$$

$$\frac{dy}{dx} + \frac{y}{x} = 0$$

$$a_0(x)\frac{dy}{dx} + a_1(x)\, y = Q(x)$$

$a_0(x) = 1$

$a_1(x) = \frac{1}{x}$ EDO(1) L.

$Q(x) = 0$

$$\frac{dy}{dx} + \frac{y}{x} = 0$$

$\underline{P(x)} = \frac{1}{x}$

$$\frac{dy}{y} + \frac{dx}{x} = 0$$

$Q(y) = y$

$R(x) = 1$

$S(y) = 1$

$$\int \frac{dy}{y} + \int \frac{dx}{x} = C$$

$$\int \frac{P(x)}{R(x)}dx + \int \frac{S(y)}{Q(y)}dy = C$$

$$Ly + Lx = C$$

$$Lyx = C$$

$$yx = e^C$$

$$\boxed{y = \frac{C}{x}}$$