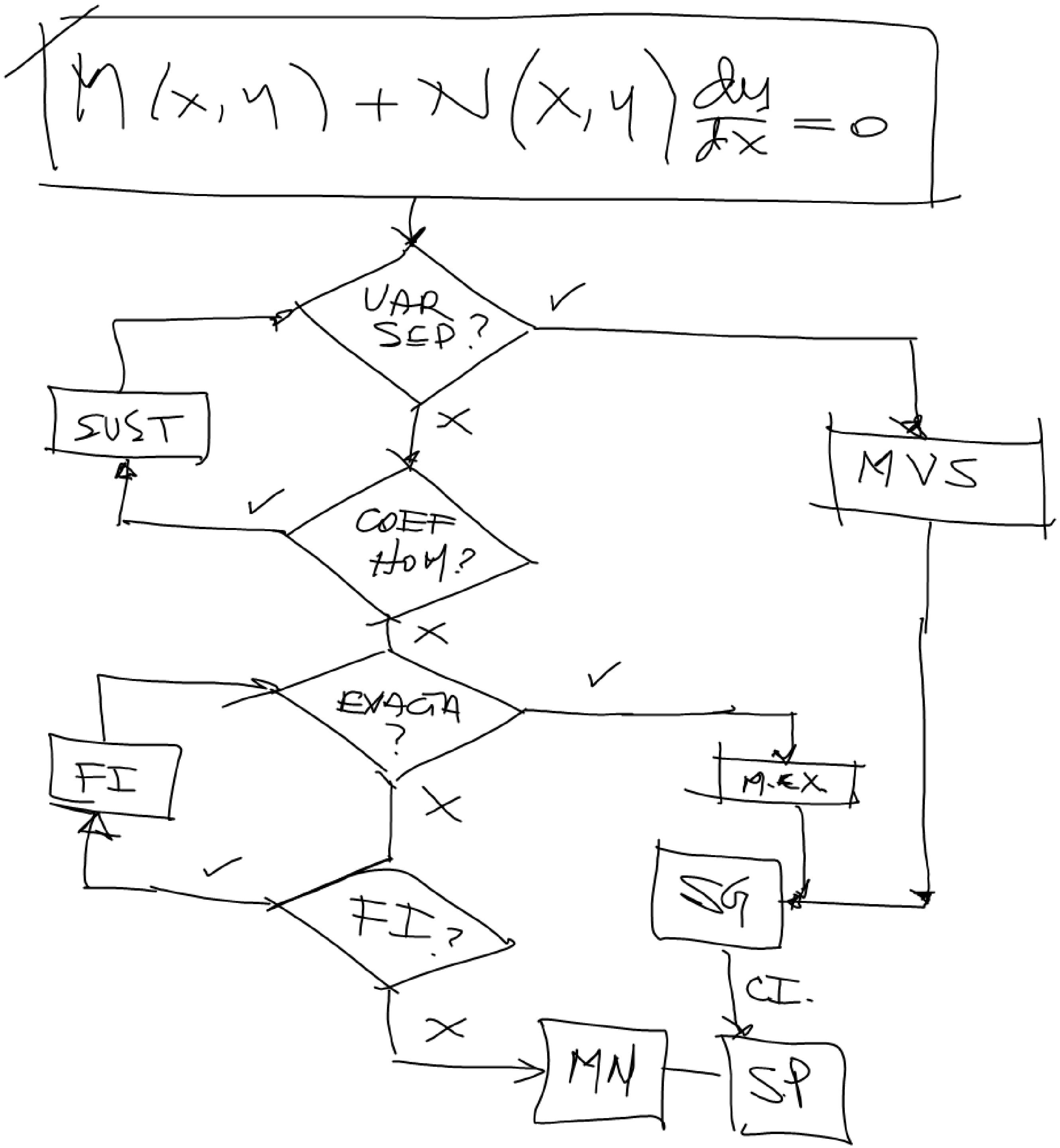
TEMA 1.- EDO(1)NL

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

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

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

$$\boxed{M + N\frac{dy}{dx} = 0}$$ EDO(1)NL


$M(x,y) + N(x,y)\frac{dy}{dx} = 0$
VAR SEP ?
SUST
MVS
COEF HOM ?
EXACTA ?
FI
M.EX
FI ?
SG
C.I.
MN
S.P

MÉTODO VARIABLES SEP.

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

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

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

✓✓ $P(x)=-2x$ $\quad R(x)=1+x^{2}$

$Q(y)=(1+e^{y})$ $\quad S(y)=e^{y}$

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

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

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

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

SG

$$\int\frac{P(x)}{R(x)}dx+\int\frac{S(y)}{Q(y)}dy=C_{1}$$

EDO(1) NL.

$$P(x) = -2x \qquad R(x) = (1+x^2)$$
$$Q(y) = (1+e^y) \qquad S(y) = e^y$$

$$\int \frac{-2x}{(1+x^2)}\,dx + \int \frac{e^y}{(1+e^y)}\,dy = C_1$$

$$-L(1+x^2) + L(1+e^y) = C_1$$

log

$$L\left(\frac{1+e^y}{1+x^2}\right) = C_1 \longrightarrow e^{C_1}$$

$$\frac{1+e^y}{1+x^2} = C_{10}$$

SG $\quad 1+e^y = C_{10}\,(1+x^2)$