

$$\textcircled{*} \quad y^{(n)} = f(x, y, y', \dots, y^{(n-1)})$$

$$Y = \begin{pmatrix} y \\ \vdots \\ y^{(n-1)} \end{pmatrix} \quad Y' = \begin{pmatrix} y' \\ \vdots \\ y^{(n)} \end{pmatrix} = \begin{pmatrix} y' \\ \vdots \\ y^{(n-1)} \\ f(x, Y) \end{pmatrix}$$

$$F(x, Y) = \begin{pmatrix} y' \\ \vdots \\ y^{(n-1)} \\ f(x, Y) \end{pmatrix} = Y'$$

$$\textcircled{*} \quad \text{Solution } Y \text{ de } Y' = F(x, Y)$$

alors $Y = \begin{pmatrix} y_0 \\ \vdots \end{pmatrix} \rightarrow$ solution de $y^{(n)} = f(x, y, \dots, y^{(n-1)})$