

Serie N2 ALGEBRE

Exo 1:

$$1 - \begin{pmatrix} 1 & 3 \\ 0 & 2 \\ 5 & 1 \\ 2 & 3 \end{pmatrix} \Rightarrow \begin{vmatrix} 1 & 3 \\ 0 & 2 \end{vmatrix} = 2 \neq 0 \text{ donc } \text{rg} = 2$$

$$2 - \begin{pmatrix} 2 & 1 & 3 & -3 \\ -1 & 2 & 1 & 4 \\ 1 & 1 & 2 & -1 \end{pmatrix} \xrightarrow[\substack{L_1 + 2L_2 \\ L_1 - 2L_3}]{L_1 + 2L_2} \begin{pmatrix} 2 & 1 & 3 & -3 \\ 0 & 5 & 5 & 5 \\ 0 & -1 & -1 & -1 \end{pmatrix}$$

$$\xrightarrow[L_2 + 5L_3]{L_1 + 5L_3} \begin{pmatrix} 2 & 1 & 3 & -3 \\ 0 & 5 & 5 & 5 \\ 0 & 0 & 0 & 0 \end{pmatrix} \Rightarrow \text{rg} = 2.$$

$$2 - \begin{pmatrix} 1 & 3 & 1 & -2 & -3 \\ 1 & 4 & 3 & -1 & -4 \\ 2 & 3 & -4 & -7 & -3 \\ 3 & 8 & 1 & -7 & -8 \end{pmatrix} \xrightarrow[\substack{2L_1 - L_3 \\ 3L_1 - L_4}]{L_1 - L_2} \begin{pmatrix} 1 & 3 & 1 & -2 & -3 \\ 0 & -1 & -2 & -1 & 1 \\ 0 & 3 & 6 & 3 & -3 \\ 0 & 1 & 2 & 1 & -1 \end{pmatrix}$$

$$3L_2 + 2L_3 \begin{pmatrix} 1 & 3 & 1 & -2 & -3 \\ 0 & -1 & -2 & -1 & 1 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{pmatrix} \Rightarrow \text{rg} = 2$$

Exo 2:

$$\begin{vmatrix} 1 & 3 \\ -7 & 5 \end{vmatrix} = 5 + (7 \times 3) = 26 \neq 0$$

$$\begin{vmatrix} 2 & 3 & 3 \\ 5 & 15 & 7 \\ 0 & -2 & 0 \end{vmatrix} = 0 - (-2) \begin{vmatrix} 2 & 3 \\ 5 & 7 \end{vmatrix} = -2 \neq 0$$

⑥