

$$w) \begin{cases} x + y + 2z = 4 \\ 3x - y + z = 3 \end{cases}$$

$$\begin{array}{l} L_1 \\ L_2 \end{array} \begin{array}{ccc} x & y & z \\ \left(\begin{array}{ccc|c} \boxed{1} & 1 & 2 & 4 \\ 3 & -1 & 1 & 3 \end{array} \right) & L_2 \leftarrow L_2 - 3L_1 \end{array}$$

$$\left(\begin{array}{ccc|c} \boxed{1} & 1 & 2 & 4 \\ 0 & -4 & -5 & -9 \end{array} \right) \quad L_2 \leftarrow L_2 \div (-4)$$

$$\left(\begin{array}{ccc|c} \boxed{1} & 1 & 2 & 4 \\ 0 & 1 & \frac{5}{4} & \frac{9}{4} \end{array} \right) \quad L_1 \leftarrow L_1 - L_2$$

$$\begin{array}{l} L_1 \\ L_2 \end{array} \begin{array}{ccc} x & y & z \\ \left(\begin{array}{ccc|c} \boxed{1} & 0 & \frac{3}{4} & \frac{7}{4} \\ 0 & \boxed{1} & \frac{5}{4} & \frac{9}{4} \end{array} \right) & \Rightarrow \begin{cases} x + \frac{3}{4}z = \frac{7}{4} \\ y + \frac{5}{4}z = \frac{9}{4} \end{cases} & \begin{array}{l} 1 \text{ degré de} \\ \text{liberté} \end{array} \end{array}$$

$$\Rightarrow \begin{cases} x = \frac{7}{4} - \frac{3}{4}t \\ y = \frac{9}{4} - \frac{5}{4}t \\ z = t \end{cases}$$

$$\Rightarrow S = \left\{ \left(\frac{7}{4} - \frac{3}{4}t ; \frac{9}{4} - \frac{5}{4}t ; t \right) \mid t \in \mathbb{R} \right\}$$

ou

$$\Rightarrow \begin{cases} x = \frac{7}{4} - 3t \\ y = \frac{9}{4} - 5t \\ z = 4t \end{cases} \quad S = \left\{ \left(\frac{7}{4} - 3t ; \frac{9}{4} - 5t ; 4t \right) \mid t \in \mathbb{R} \right\}$$

$$p) \begin{cases} x + 2y - 3z = 0 \\ 5x - 3y + z = 0 \end{cases}$$

Ce système est homogène,

$$\begin{array}{l} L_1 \\ L_2 \end{array} \left(\begin{array}{ccc|c} \overset{x}{\boxed{1}} & \overset{y}{2} & \overset{z}{-3} & 0 \\ 5 & -3 & 1 & 0 \end{array} \right) \quad L_2 \leftarrow L_2 - 5L_1$$

$$\left(\begin{array}{ccc|c} \boxed{1} & 2 & -3 & 0 \\ 0 & -13 & 16 & 0 \end{array} \right) \quad L_2 \leftarrow L_2 \div (-13)$$

$$\left(\begin{array}{ccc|c} \boxed{1} & 2 & -3 & 0 \\ 0 & 1 & -\frac{16}{13} & 0 \end{array} \right) \quad L_1 \leftarrow L_1 - 2L_2$$

$$\begin{array}{l} L_1 \\ L_2 \end{array} \left(\begin{array}{ccc|c} \overset{x}{\boxed{1}} & \overset{y}{0} & \overset{z}{-\frac{7}{13}} & 0 \\ 0 & \boxed{1} & -\frac{16}{13} & 0 \end{array} \right) \Rightarrow \begin{cases} x - \frac{7}{13}z = 0 \\ y - \frac{16}{13}z = 0 \end{cases}$$

$$\begin{cases} x = 7t \\ y = 16t \\ z = 13t \end{cases}$$

$$\Rightarrow \underline{S = \{ (7t; 16t; 13t) \mid t \in \mathbb{R} \}}$$