

$$9x + 18y + 24z = 36$$

$$\textcircled{1} \text{ mcd}(9, 18, 24) = 3 \mid 36 \checkmark$$

$$\textcircled{2} 18y + 24z = \text{mcd}(18, 24) \cdot w = 6w$$

$$\textcircled{3} 9x + 6w = 36$$

$$\textcircled{4} 18y + 24z = 6 \cdot (-12 + 3t)$$

▷ Sol. particular:

$$\left(\begin{array}{l} 18\tilde{y} + 24\tilde{z} = \text{mcd}(18, 24) = 6 \\ \text{Por Euclides } \tilde{y}_0 = -1, \tilde{z}_0 = 1 \end{array} \right)$$

$$\left. \begin{array}{l} y_0 = (-1) \cdot (-12 + 3t) \\ z_0 = 1 \cdot (-12 + 3t) \end{array} \right\} \begin{array}{l} \text{sol.} \\ \text{part.} \end{array}$$

▷ Sol. general:

$$\left(\begin{array}{l} 18y + 24z = 0 \\ y_h = \frac{-24}{\text{mcd}(18, 24)} \cdot s = -4s \\ z_h = \frac{18}{\text{mcd}(18, 24)} \cdot s = 3s \end{array} \right)$$

$$y = y_0 + y_h = 12 - 3t - 4s$$

$$z = z_0 + z_h = -12 + 3t + 3s$$

▷ Sol. particular:

$$\left(\begin{array}{l} 9\tilde{x} + 6\tilde{w} = \text{mcd}(9, 6) = 3 \\ \text{Por Euclides } \tilde{x}_0 = 1, \tilde{w}_0 = -1 \end{array} \right)$$

$$\left. \begin{array}{l} x_0 = 12 \\ w_0 = -12 \end{array} \right\} \text{sol. particular}$$

▷ Sol. general:

$$\left(\begin{array}{l} 9x + 6w = 0 \\ x_h = \frac{-6}{\text{mcd}(9, 6)} \cdot t = -2t \\ y_h = \frac{9}{\text{mcd}(9, 6)} \cdot t = 3t \end{array} \right)$$

$$x = x_0 + x_h = 12 - 2t$$

$$w = w_0 + w_h = -12 + 3t$$

\textcircled{5} Las soluciones son

$$\begin{array}{l} x = 12 - 2t \\ y = 12 - 3t - 4s \\ z = -12 + 3t + 3s \end{array}$$

con
 $s, t \in \mathbb{Z}$