Tema

3.4.2024.

Tema 3

$$\begin{cases} \alpha + 2\beta - \gamma = 2 \\ 2\alpha - \beta + 3\gamma = 4 \\ 3\alpha + \beta + \gamma = 5 \end{cases} \Rightarrow \left(\begin{array}{cccc} 1 & 2 & -1 & 2 \\ 1 & -1 & 3 & 4 \\ 3 & 1 & 1 & 5 \end{array}\right) \xrightarrow[L_3 \leftarrow L_3 - 3L_1]{L_2 \leftarrow L_2 - L_1}$$

$$\rightarrow \left(\begin{array}{cccc} 1 & 2 & -1 & 2 \\ 0 & -3 & 4 & 2 \\ 0 & -5 & 4 & -1 \end{array}\right) \xrightarrow[L_3 \leftarrow L_3 \cdot \left(-\frac{1}{5}\right)]{L_2 \leftarrow L_2 \cdot \left(-\frac{1}{3}\right)} \left(\begin{array}{cccc} 1 & 2 & -1 & 2 \\ 0 & 1 & -\frac{4}{3} & -\frac{2}{3} \\ 0 & 1 & -\frac{4}{5} & \frac{1}{5} \end{array}\right) \rightarrow$$

$$\xrightarrow{L_3 \leftarrow L_3 - L_2} \left(\begin{array}{cccc} 1 & 2 & -1 & 2 \\ 0 & 1 & -\frac{4}{3} & -\frac{2}{3} \\ 0 & 0 & \frac{8}{15} & \frac{13}{15} \end{array}\right) \xrightarrow{L_3 \leftarrow L_3 \cdot \frac{15}{8}}$$

$$\rightarrow \left(\begin{array}{cccc} 1 & 2 & -1 & 2 \\ 0 & 1 & -\frac{4}{3} & -\frac{2}{3} \\ 0 & 0 & 1 & \frac{13}{8} \end{array}\right)$$

$\Rightarrow (\alpha, \beta, \gamma) = (\alpha, 1, \frac{13}{8})$

$\Rightarrow \begin{cases} \gamma = \frac{13}{8} \\ \beta = -\frac{2}{3} + \frac{1}{3} \cdot \frac{13}{8} \cdot 2 = -\frac{4}{6} + \frac{13}{6} = \frac{9}{6} = \frac{3}{2} \\ \alpha = 2 + \frac{13}{8} - 2 \cdot \frac{3}{2} = \frac{16+13-24}{8} = \frac{5}{8} \end{cases}$

$\Rightarrow (\alpha, \beta, \gamma) = (\frac{5}{8}, \frac{3}{2}, \frac{13}{8})$