iii) Como visto anteriormente se tiene que solucionar:

$$\begin{bmatrix} \frac{1}{5} & -\frac{5}{3} & -1 \\ \frac{1}{3} & 1 & 0 \\ 1 & 0 & 1 \end{bmatrix} \begin{bmatrix} \alpha \\ \beta \\ \gamma \end{bmatrix} = \begin{bmatrix} 3 \\ 2 \\ 1 \end{bmatrix}$$

$$\left[\begin{array}{ccc|c} \frac{1}{5} & -\frac{5}{3} & -1 & 3 \\ \frac{1}{3} & 1 & 0 & 2 \\ 1 & 0 & 1 & 1 \end{array}\right] \xrightarrow{F_1 \leftrightarrow F_3} \left[\begin{array}{ccc|c} 1 & 0 & 1 & 1 \\ \frac{1}{3} & 1 & 0 & 2 \\ \frac{1}{5} & -\frac{5}{3} & -1 & 3 \end{array}\right]$$

$$\xrightarrow[15 * F_3]{3 * F_2} \left[\begin{array}{ccc|c} 1 & 0 & 1 & 1 \\ 1 & 3 & 0 & 6 \\ 3 & -25 & -15 & 45 \end{array}\right] \xrightarrow[F_3 - 3F_1]{F_2 - F_1} \left[\begin{array}{ccc|c} 1 & 0 & 1 & 1 \\ 0 & 3 & -1 & 5 \\ 0 & -25 & -18 & 42 \end{array}\right]$$

$$\xrightarrow{F_3 + \frac{25}{3} F_1} \left[\begin{array}{ccc|c} 1 & 0 & 1 & 1 \\ 0 & 3 & -1 & 5 \\ 0 & 0 & -\frac{79}{3} & \frac{151}{3} \end{array}\right]$$

Luego: $(3,2,1) = w + u$

$w = \left(\frac{1}{5}, \frac{1}{3}, 1\right)\left(-\frac{93}{79}\right)$

$u = \left(-\frac{5}{3}, 1, 0\right)\left(\frac{144}{237}\right) + \left(-1, 0, 1\right)\left(\frac{330}{79}\right)$

Luego: $-\frac{79}{3}\alpha = \frac{151}{3}$

$\alpha = -\frac{93}{79}$

$3\beta = 3 + \alpha$

$\beta = \frac{144}{237}$

$\gamma = \frac{330}{79}$