

$$3. \begin{pmatrix} 2 & -2 & 2 & -5 & -1 \\ -2 & 2 & -1 & 0 & 2 \\ -2 & 2 & -3 & -2 & 0 \\ 1 & 0 & -2 & -1 & -5 \end{pmatrix} \begin{array}{l} F_1' = F_1 \\ F_1' = F_1 \\ F_2' = F_2 + 2F_1' \\ F_3' = F_3 + 2F_1' \\ F_4' = F_4 + 2F_1' \end{array} \rightarrow \begin{pmatrix} 1 & 0 & -2 & -1 & -5 \\ 0 & 2 & -5 & -2 & -8 \\ 0 & 2 & -7 & -4 & -10 \\ 0 & -2 & 6 & -3 & 9 \end{pmatrix} \begin{array}{l} F_3' = F_3 - F_2 \\ F_4' = F_4 + F_2 \end{array}$$

$$\rightarrow \begin{pmatrix} 1 & 0 & -2 & -1 & -5 \\ 0 & 2 & -5 & -2 & -8 \\ 0 & 0 & -2 & -2 & -2 \\ 0 & 0 & 1 & -5 & 1 \end{pmatrix} \begin{array}{l} F_3 = F_3 / 2 \\ F_1' = F_1 + F_3' \end{array} \rightarrow \begin{pmatrix} 1 & 0 & -2 & -1 & -5 \\ 0 & 2 & -5 & -2 & -8 \\ 0 & 0 & -2 & -2 & -2 \\ 0 & 0 & 0 & -6 & 0 \end{pmatrix}$$

Elige un pivote en la última columna, con lo que:

$$(0, 0, 0, 0, 1)$$