

$$D^{-1} = \begin{pmatrix} 1 & 3 & -5 & -7 \\ 0 & 1 & 2 & -3 \\ 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$\det(D) = \begin{vmatrix} 1 & 3 & -5 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{vmatrix} = \begin{vmatrix} 1 & 3 \\ 0 & 1 \end{vmatrix} = 1 \neq 0$$

Det is non zero.

$$D^{-1} = \begin{pmatrix} 1 & -3 & 11 & -24 \\ 0 & 1 & -2 & 7 \\ 0 & 0 & 1 & -2 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

Ex 061

(4)

$$\begin{cases} 2x - y + z + t = 1 \\ x - 2y - 3z + 4t = 2 \\ x + 7y - 4z + 11t = 5 \end{cases}$$

$$\left(\begin{array}{cccc|c} 2 & -1 & 1 & 1 & 1 \\ 1 & -2 & -3 & 4 & 2 \\ 1 & 7 & -4 & 11 & 5 \end{array} \right) \xrightarrow[L_1 - 2L_2]{L_1 - L_2} \left(\begin{array}{cccc|c} 2 & -1 & 1 & 1 & 1 \\ 0 & -5 & 3 & -7 & -3 \\ 0 & -15 & 9 & -21 & -9 \end{array} \right)$$

$$\xrightarrow{-3L_2 + L_3} \left(\begin{array}{cccc|c} 2 & -1 & 1 & 1 & 1 \\ 0 & -5 & 3 & -7 & -3 \\ 0 & 0 & 0 & 0 & 0 \end{array} \right) \Leftrightarrow \begin{cases} 2x - y + z + t = 1 \\ -5y + 3z - 7t = -3 \end{cases}$$

$$\therefore (2) \Rightarrow y = \frac{1}{5} [3z - 7t + 3] \quad \text{donc } x = -\frac{1}{5} (3z + 6t + 4)$$

$$2x + \frac{3}{5}z - \frac{7}{5}t + \frac{3}{5} + z + t = 1 \quad S = \left\{ \left(\frac{-3z + 6t - 4}{5} \right); -\frac{(3z + 7t + 3)}{5} \right\}$$