

$$x_1 + 2x_2 - 3x_3 - 2x_4 + 4x_5 = 1$$

$$2x_1 + 5x_2 - 8x_3 - x_4 + 6x_5 = 4$$

$$x_1 + 4x_2 - 7x_3 + 5x_4 + 2x_5 = 8$$

in Augmented matrix form

$$\left[\begin{array}{ccccc|c} 1 & 2 & -3 & -2 & 4 & 1 \\ 2 & 5 & -8 & -1 & 6 & 4 \\ 1 & 4 & -7 & 5 & 2 & 8 \end{array} \right]$$

$$R_2 \rightarrow R_2 - 2R_1 \quad \wedge \quad R_3 \rightarrow R_3 - R_1$$

$$\left[\begin{array}{ccccc|c} 1 & 2 & -3 & -2 & 4 & 1 \\ 0 & 1 & -2 & 3 & -2 & 2 \\ 0 & 2 & -4 & 7 & -2 & 7 \end{array} \right]$$

$$R_3 \rightarrow R_3 - 2R_2$$

$$\left[\begin{array}{ccccc|c} 1 & 2 & -3 & -2 & 4 & 1 \\ 0 & 1 & -2 & 3 & -2 & 2 \\ 0 & 0 & 0 & 1 & 2 & 3 \end{array} \right]$$

$$\Rightarrow x_2 - 2x_3 + 3x_4 - 2x_5 = 2$$

$$x_1 + 2x_2 - 3x_3 - 2x_4 + 4x_5 = 1$$

$$x_4 + 2x_5 = 3$$

on solving

we get

$$\Rightarrow x_4 = 3 - 2x_5$$

$$x_2 = 2x_3 + 8x_5 - 7$$

$$x_1 = 21 - x_3 - 24x_5$$

where x_3 & x_5 are free variable

or $x_3, x_5 \in \mathbb{R}$