

Find the solution for the following system (equations): [103 北科大環工 3]

$$x_1 + x_2 + 2x_3 + 3x_4 = 1$$

$$x_1 + 2x_2 + x_3 + 4x_4 = 1$$

$$2x_1 + 5x_2 + 2x_3 + x_4 = 2$$

$$x_1 + 3x_3 + 2x_4 = 5$$

[解]利用高斯消去法

$$\begin{bmatrix} 1 & 1 & 2 & 3 & 1 \\ 1 & 2 & 1 & 4 & 1 \\ 2 & 5 & 2 & 1 & 2 \\ 1 & 0 & 3 & 2 & 5 \end{bmatrix} \xrightarrow{R_{12}(-1); R_{13}(-2); R_{14}(-1)} \begin{bmatrix} 1 & 1 & 2 & 3 & 1 \\ 0 & 1 & -1 & 1 & 0 \\ 0 & 3 & -2 & -5 & 0 \\ 0 & -1 & 1 & -1 & 4 \end{bmatrix}$$

$$\xrightarrow{R_{23}(-3); R_{24}(1)} \begin{bmatrix} 1 & 1 & 2 & 3 & 1 \\ 0 & 1 & -1 & 1 & 0 \\ 0 & 0 & 1 & -8 & 0 \\ 0 & 0 & 0 & 0 & 4 \end{bmatrix}$$

此方程組無解