

$$\begin{cases} 2x_1 + 5x_2 + 4x_3 + x_4 = 20 \\ x_1 + 3x_2 + 2x_3 + x_4 = 11 \\ 2x_1 + 10x_2 + 9x_3 + 7x_4 = 40 \\ 3x_1 + 8x_2 + 9x_3 + 2x_4 = 34 \end{cases}$$

$$\left(\begin{array}{cccc|c} 2 & 5 & 4 & 1 & 20 \\ 1 & 3 & 2 & 1 & 11 \\ 2 & 10 & 9 & 7 & 40 \\ 3 & 8 & 9 & 2 & 34 \end{array} \right) \begin{array}{l} \\ \text{II} \cdot 2 - \text{I} \\ \text{III} - \text{I} \\ \text{IV} \cdot 2 - \text{I} \cdot 3 \end{array} \sim \left(\begin{array}{cccc|c} 2 & 5 & 4 & 1 & 20 \\ 0 & 1 & 0 & 1 & 2 \\ 0 & 5 & 5 & 6 & 20 \\ 0 & 1 & 6 & 1 & 14 \end{array} \right) \begin{array}{l} \\ \\ \text{III} - \text{II} \cdot 5 \\ \text{IV} - \text{II} \end{array}$$

$$\left(\begin{array}{cccc|c} 2 & 5 & 4 & 1 & 20 \\ 0 & 1 & 0 & 1 & 2 \\ 0 & 0 & 5 & 1 & 10 \\ 0 & 0 & 6 & 0 & 12 \end{array} \right) \sim \left(\begin{array}{cccc|c} 2 & 5 & 4 & 1 & 20 \\ 0 & 1 & 0 & 1 & 2 \\ 0 & 0 & 5 & 1 & 10 \\ 0 & 0 & 0 & -6 & 0 \end{array} \right) \begin{array}{l} \\ \\ \text{IV} \cdot 5 - \text{III} \cdot 6 \\ \text{IV} \cdot \frac{1}{-6} \end{array}$$

$$\left(\begin{array}{cccc|c} 2 & 5 & 4 & 1 & 20 \\ 0 & 1 & 0 & 1 & 2 \\ 0 & 0 & 5 & 1 & 10 \\ 0 & 0 & 0 & 1 & 0 \end{array} \right) \begin{array}{l} \text{I} - \text{IV} \\ \text{II} - \text{IV} \\ \text{III} - \text{IV} \end{array} \sim \left(\begin{array}{cccc|c} 2 & 5 & 4 & 0 & 20 \\ 0 & 1 & 0 & 0 & 2 \\ 0 & 0 & 5 & 0 & 10 \\ 0 & 0 & 0 & 1 & 0 \end{array} \right) \begin{array}{l} \text{I} \cdot 5 - \text{II} \cdot 4 \\ \\ \\ \end{array} \sim$$

$$\sim \left(\begin{array}{cccc|c} 1 & 0 & 25 & 0 & 60 \\ 0 & 1 & 0 & 0 & 2 \\ 0 & 0 & 5 & 0 & 10 \\ 0 & 0 & 0 & 1 & 0 \end{array} \right) \begin{array}{l} \text{I} \cdot 5 - \text{II} \cdot 5 \\ \\ \text{III} \cdot \frac{1}{5} \\ \end{array} \sim \left(\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 2 \\ 0 & 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 0 & 2 \\ 0 & 0 & 0 & 1 & 0 \end{array} \right) \begin{array}{l} \text{I} \cdot \frac{1}{2} \\ \\ \\ \end{array} \sim$$

$$\left(\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 0 & 2 \\ 0 & 0 & 0 & 1 & 0 \end{array} \right) \sim \begin{cases} x_1 = 1 \\ x_2 = 2 \\ x_3 = 2 \\ x_4 = 0 \end{cases}$$