Типовой рассчёт №1 Вариант №5

$$\begin{cases} x_1 - x_3 + x_5 = 0 \\ x_2 - x_4 + x_6 = 0 \\ x_1 - x_2 + x_5 - x_6 = 0 \\ x_1 - x_4 + x_5 = 0 \end{cases}$$

$$\Rightarrow \begin{pmatrix} 1 & 0 & -1 & 0 & 1 & 0 \\ 0 & 1 & 0 & -1 & 0 & 1 \\ 1 & -1 & 0 & 0 & 1 & -1 \\ 1 & 0 & 0 & -1 & 1 & 0 \end{pmatrix} \overset{II+III}{\sim} \begin{pmatrix} 1 & 0 & -1 & 0 & 1 & 0 \\ 1 & 0 & 0 & -1 & 1 & 0 \\ 1 & -1 & 0 & 0 & 1 & -1 \\ 1 & 0 & 0 & -1 & 1 & 0 \end{pmatrix} \overset{IV-II}{\sim}$$

$$\begin{pmatrix} 1 & 0 & -1 & 0 & 1 & 0 \\ 1 & 0 & 0 & -1 & 1 & 0 \\ 1 & 1 & 0 & 0 & 1 & -1 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix} \overset{III-II}{\sim} \begin{pmatrix} 1 & 0 & -1 & 0 & 1 & 0 \\ 1 & 0 & 0 & -1 & 1 & 0 \\ 0 & -1 & 0 & 1 & 0 & -1 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix} \overset{II-I}{\sim}$$

$$\sim \begin{array}{c} \begin{matrix} x_1 & x_2 & x_3 & x_4 & x_5 & x_6 \end{matrix} \\ \begin{pmatrix} 1 & 0 & -1 & 0 & 1 & 0 \\ 0 & -1 & 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix} \end{array} \Rightarrow \begin{array}{l} x_1, x_2, x_3 - \text{базисные} \\ x_4, x_5, x_6 - \text{свободные} \end{array}$$

$$\begin{cases} x_1 = t \\ x_2 = s \\ x_3 = m \\ t - m + x_5 = 0 \\ -s + x_4 - x_6 = 0 \\ m = x_4 \end{cases} \qquad \begin{cases} x_1 = t \\ x_2 = s \\ x_3 = m \\ x_4 = m \\ x_6 = m - s \\ x_5 = m - t \end{cases}$$

$$X_{общ} = t \cdot \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \\ -1 \\ 0 \end{pmatrix} + 4 \cdot s \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \\ 0 \\ -1 \end{pmatrix} + m \begin{pmatrix} 0 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \end{pmatrix}$$

$$ФСР = \left\{ \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \\ -1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \\ 0 \\ -1 \end{pmatrix}, \begin{pmatrix} 0 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \end{pmatrix} \right\}$$