

1.

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{9}{2} & 1 & 0 & 0 \\ -3 & -\frac{24}{37} & 1 & 0 \\ 1 & \frac{7}{37} & -\frac{787}{66} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 8 & 3 & -2 \\ 0 & -37 & -\frac{25}{2} & 1 \\ 0 & 0 & \frac{33}{37} & -\frac{198}{37} \\ 0 & 0 & 0 & -57 \end{bmatrix}$$

3.

$$\begin{pmatrix} 6 & 5 & 12 \\ -9 & -12 & -11 \\ -13 & -14 & -10 \end{pmatrix}$$

4.

$$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 3 & 4 & 5 & 1 & 6 & 2 \end{pmatrix}; \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 4 & 6 & 5 & 1 & 3 & 2 \end{pmatrix}$$

5.

$$\sigma = (1, 2, 8, 6, 7)(3, 4, 5, 9), \text{ord} = 20, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 7 & 4 & 5 & 9 & 2 & 8 & 1 & 3 \end{pmatrix} = (1, 6, 2, 7, 8)(3, 4, 5, 9)$$

6. Id; (1, 2, 5, 3, 7, 4, 6); (1, 3, 6, 5, 4, 2, 7); (1, 4, 3, 2, 6, 7, 5);
(1, 5, 7, 6, 2, 3, 4); (1, 6, 4, 7, 3, 5, 2); (1, 7, 2, 4, 5, 6, 3);

7. брак

$$8. -3 + -4 * x + 0 * x^2 + 0 * x^3 + 2 * x^4$$

9. При $\lambda = 9$

10. Определитель: $-11\lambda - 158$, при $\lambda = [-158/11]$ ранг равен 3, иначе 4