

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{10}{7} & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ \frac{3}{7} & \frac{38}{59} & -\frac{62}{59} & 1 \end{bmatrix}, U = \begin{bmatrix} -7 & -1 & -9 & 1 \\ 0 & \frac{59}{7} & \frac{62}{7} & -\frac{59}{7} \\ 0 & 0 & -3 & 8 \\ 0 & 0 & 0 & \frac{1027}{59} \end{bmatrix}$$

3.

$$\begin{pmatrix} -3 & -7 & -14 \\ -1 & 0 & -16 \\ -2 & 16 & 14 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 4, 7)(2, 6, 5, 9, 8), ord = 20, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 8 & 4 & 7 & 6 & 2 & 1 & 9 & 5 \end{pmatrix} = (1, 3, 4, 7)(2, 8, 9, 5, 6)$$

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

$$7. \frac{2(-6)^n}{23} + \frac{21 \cdot 63^n}{23}$$

$$8. 3 + 3 * x + 3 * x^2 + 1 * x^3 + 1 * x^4$$

9. При $\lambda = 8$

10. Определитель: $-46\lambda - 239$, при $\lambda = [-239/46]$ ранг равен 3, иначе 4