

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{10} & 1 & 0 & 0 \\ \frac{3}{10} & 0 & 1 & 0 \\ -\frac{1}{10} & 1 & \frac{25}{27} & 1 \end{bmatrix}, U = \begin{bmatrix} -10 & 0 & -2 & 7 \\ 0 & 8 & -\frac{21}{5} & \frac{17}{10} \\ 0 & 0 & -\frac{27}{5} & -\frac{111}{10} \\ 0 & 0 & 0 & \frac{257}{18} \end{bmatrix}$$

3.

$$\begin{pmatrix} -20 & 6 & 14 \\ -8 & -10 & 11 \\ -12 & 1 & -1 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 3)(2, 9)(5, 7, 6, 8), \text{ord} = 12, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 9 & 4 & 1 & 7 & 8 & 6 & 5 & 2 \end{pmatrix} = (1, 3, 4)(2, 9)(5, 7, 6, 8)$$

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

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

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

$$7. \frac{5(-15)^n}{7} + \frac{2 \cdot 6^n}{7}$$

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

9. При $\lambda = -1$

10. Определитель: $-3\lambda - 13$, при $\lambda = [-13/3]$ ранг равен 3, иначе 4