

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -\frac{3}{2} & -\frac{1}{2} & 1 & 0 \\ 2 & -8 & \frac{29}{4} & 1 \end{bmatrix}, U = \begin{bmatrix} 4 & -3 & 3 & -6 \\ 0 & -1 & -7 & -4 \\ 0 & 0 & -8 & -9 \\ 0 & 0 & 0 & \frac{149}{4} \end{bmatrix}$$

3.

$$\begin{pmatrix} 3 & -4 & 13 \\ 14 & 4 & -7 \\ -3 & -6 & 16 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8, 6, 3, 5, 4)(2, 7, 9), \text{ord} = 6, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 7 & 5 & 1 & 4 & 3 & 9 & 6 & 2 \end{pmatrix} = (1, 8, 6, 3, 5, 4)(2, 7, 9)$$

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

7. брак

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

9. При $\lambda = -8$

10. Определитель: $100 - 28\lambda$, при $\lambda = [25/7]$ ранг равен 3, иначе 4