

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{3}{5} & 1 & 0 & 0 \\ -\frac{9}{10} & \frac{83}{112} & 1 & 0 \\ \frac{3}{5} & -\frac{31}{56} & \frac{1362}{59} & 1 \end{bmatrix}, U = \begin{bmatrix} -10 & 7 & 1 & -9 \\ 0 & \frac{56}{5} & \frac{43}{5} & -\frac{62}{5} \\ 0 & 0 & \frac{59}{112} & \frac{117}{56} \\ 0 & 0 & 0 & -\frac{3463}{59} \end{bmatrix}$$

3.

$$\begin{pmatrix} -11 & -12 & -11 \\ 1 & -1 & 7 \\ -12 & -5 & -1 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9, 2, 3, 7, 8, 5)(4, 6), \text{ord} = 14, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 1 & 9 & 6 & 7 & 4 & 2 & 3 & 5 \end{pmatrix} = (1, 8, 3, 9, 5, 7, 2)(4, 6)$$

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

7. $-35^n + 2 \cdot 70^n$

8. $0 + 2 * x + 3 * x^2 + 1 * x^3 + 2 * x^4$

9. При $\lambda = -9$

10. Определитель: $121\lambda - 22$, при $\lambda = [2/11]$ ранг равен 3, иначе 4