

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{3}{2} & 1 & 0 & 0 \\ -\frac{5}{3} & \frac{118}{27} & 1 & 0 \\ -1 & \frac{2}{9} & -\frac{51}{1373} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -7 & -8 & -8 \\ 0 & -\frac{9}{2} & -14 & -22 \\ 0 & 0 & \frac{1373}{27} & \frac{2236}{27} \\ 0 & 0 & 0 & \frac{12309}{1373} \end{bmatrix}$$

3.

$$\begin{pmatrix} -3 & 4 & -16 \\ -4 & 1 & -2 \\ 0 & -3 & 6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8, 9, 2, 7)(3, 4, 6, 5), \text{ord} = 20, \sigma^{-739} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 7 & 4 & 6 & 3 & 5 & 1 & 9 & 2 \end{pmatrix} = (1, 8, 9, 2, 7)(3, 4, 6, 5)$$

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

7. $-20 \cdot 60^n + 21 \cdot 63^n$

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

9. При $\lambda = 8$

10. Определитель: $-104\lambda - 128$, при $\lambda = [-16/13]$ ранг равен 3, иначе 4