

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{9}{4} & 1 & 0 & 0 \\ \frac{9}{4} & -\frac{49}{57} & 1 & 0 \\ \frac{3}{2} & -\frac{10}{19} & \frac{321}{454} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & 9 & -2 & -1 \\ 0 & \frac{57}{4} & -\frac{29}{2} & -\frac{41}{4} \\ 0 & 0 & -\frac{454}{57} & \frac{139}{57} \\ 0 & 0 & 0 & -\frac{281}{454} \end{bmatrix}$$

3.

$$\begin{pmatrix} -10 & 18 & 17 \\ -16 & -3 & -8 \\ -13 & -13 & -4 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9)(2, 5, 6, 3, 8, 7, 4), \text{ord} = 14, \sigma^{-739} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 3 & 4 & 6 & 8 & 7 & 5 & 2 & 1 \end{pmatrix} = (1, 9)(2, 3, 4, 6, 7, 5, 8)$$

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

$$7. \frac{25(-100)^n}{29} + \frac{4 \cdot 16^n}{29}$$

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

9. При $\lambda = 9$

10. Определитель: $153 - 46\lambda$, при $\lambda = [153/46]$ ранг равен 3, иначе 4