

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{3}{2} & 1 & 0 & 0 \\ -\frac{1}{2} & \frac{23}{47} & 1 & 0 \\ -4 & \frac{56}{47} & \frac{73}{385} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & -9 & 3 & -9 \\ 0 & -\frac{47}{2} & \frac{11}{2} & -\frac{41}{2} \\ 0 & 0 & -\frac{385}{47} & \frac{119}{47} \\ 0 & 0 & 0 & -\frac{1213}{55} \end{bmatrix}$$

3.

$$\begin{pmatrix} -13 & -13 & -12 \\ -1 & -7 & 1 \\ 16 & 14 & 12 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9, 3, 4)(2, 8, 5)(6, 7), \text{ord} = 12, \sigma^{-739} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 5 & 4 & 1 & 8 & 7 & 6 & 2 & 3 \end{pmatrix} = (1, 9, 3, 4)(2, 5, 8)(6, 7)$$

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

$$7. -\frac{4 \cdot 28^n}{5} + \frac{9 \cdot 63^n}{5}$$

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

9. При $\lambda = -5$

10. Определитель: $-242\lambda - 476$, при $\lambda = [-238/121]$ ранг равен 3, иначе 4