1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 9 & 1 & 0 & 0 \\ -7 & 0 & 1 & 0 \\ -1 & -3 & -\frac{263}{74} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & 0 & -10 & -8 \\ 0 & 3 & 93 & 72 \\ 0 & 0 & -74 & -65 \\ 0 & 0 & 0 & -\frac{1037}{74} \end{bmatrix}$

3.

$$\begin{pmatrix} -20 & 9 & 12 \\ 6 & 9 & 0 \\ -19 & 16 & -10 \end{pmatrix}$$

4.

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

5.

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

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

7. $\frac{45(-90)^n}{47} + \frac{2 \cdot 4^n}{47}$

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

9. При $\lambda = -7$

10. Определитель: $43\lambda + 280$, при $\lambda = [-280/43]$ ранг равен 3, иначе 4