1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{3}{5} & 1 & 0 & 0 \\ \frac{3}{5} & -\frac{34}{31} & 1 & 0 \\ -\frac{1}{5} & -\frac{7}{31} & \frac{28}{43} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & 3 & 1 & -5 \\ 0 & \frac{31}{5} & \frac{42}{5} & -2 \\ 0 & 0 & -\frac{43}{31} & \frac{56}{31} \\ 0 & 0 & 0 & \frac{145}{43} \end{bmatrix}$

3.

$$\begin{pmatrix} 4 & -10 & 0 \\ -20 & -14 & -18 \\ -3 & 1 & 11 \end{pmatrix}$$

4.

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

5.

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

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

7. $-\frac{5 \cdot 35^n}{4} + \frac{9 \cdot 63^n}{4}$

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

9. При $\lambda = 8$

10. Определитель: $52\lambda + 94$, при $\lambda = [-47/26]$ ранг равен 3, иначе 4