1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -4 & 1 & 0 & 0 \\ -10 & \frac{35}{16} & 1 & 0 \\ 7 & -\frac{25}{16} & -\frac{19}{33} & 1 \end{bmatrix}, U = \begin{bmatrix} 1 & 4 & 3 & 2 \\ 0 & 16 & 3 & 12 \\ 0 & 0 & \frac{231}{16} & -\frac{17}{4} \\ 0 & 0 & 0 & \frac{307}{33} \end{bmatrix}$

3.

$$\begin{pmatrix} -18 & -7 & -3 \\ 7 & 12 & -10 \\ 14 & 5 & -20 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,7)(2,3,6,4,8,5,9), ord = 14, \sigma^{-811} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 3 & 6 & 8 & 9 & 4 & 1 & 5 & 2 \end{pmatrix} = (1,7)(2,3,6,4,8,5,9)$$

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

7. $\frac{8(-24)^n}{35} + \frac{27 \cdot 81^n}{35}$

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

9. При $\lambda = -8$

10. Определитель: $32\lambda + 28$, при $\lambda = [-7/8]$ ранг равен 3, иначе 4