1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ \frac{1}{6} & \frac{15}{8} & 1 & 0 \\ \frac{3}{2} & -\frac{45}{8} & -\frac{225}{83} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -9 & -1 & 2 \\ 0 & -4 & -7 & 4 \\ 0 & 0 & \frac{415}{24} & -\frac{101}{6} \\ 0 & 0 & 0 & -\frac{2667}{83} \end{bmatrix}$

3.

$$\begin{pmatrix} -14 & -15 & 3 \\ 12 & 16 & 17 \\ -17 & -16 & 3 \end{pmatrix}$$

4.

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

5.

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

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

7. $-\frac{4 \cdot 20^n}{5} + \frac{9 \cdot 45^n}{5}$

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

9. При $\lambda = -4$

10. Определитель: $-50\lambda - 16$, при $\lambda = [-8/25]$ ранг равен 3, иначе 4