1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{9} & 1 & 0 & 0 \\ \frac{5}{9} & \frac{16}{31} & 1 & 0 \\ 1 & \frac{90}{31} & \frac{692}{267} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & 5 & 5 & -9 \\ 0 & -\frac{31}{9} & \frac{32}{9} & 7 \\ 0 & 0 & -\frac{267}{31} & -\frac{205}{31} \\ 0 & 0 & 0 & \frac{752}{267} \end{bmatrix}$

3.

$$\begin{pmatrix} 3 & -3 & -8 \\ 1 & 10 & -14 \\ -10 & -12 & -1 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,8)(2,5,9,6,4,7,3), ord = 14, \sigma^{-827} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 3 & 7 & 6 & 2 & 9 & 4 & 1 & 5 \end{pmatrix} = (1,8)(2,3,7,4,6,9,5)$$

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

7. $\frac{15(-30)^n}{17} + \frac{2 \cdot 4^n}{17}$

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

9. При $\lambda = -7$

10. Определитель: $-8\lambda - 64$, при $\lambda = [-8]$ ранг равен 3, иначе 4