1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{7}{3} & 1 & 0 & 0 \\ -\frac{2}{3} & -2 & 1 & 0 \\ -1 & -\frac{9}{4} & \frac{109}{72} & 1 \end{bmatrix}$, $U = \begin{bmatrix} -3 & -1 & -3 & 6 \\ 0 & \frac{4}{3} & 13 & -20 \\ 0 & 0 & 18 & -44 \\ 0 & 0 & 0 & \frac{479}{18} \end{bmatrix}$

3.

$$\begin{pmatrix} 2 & -1 & -13 \\ -10 & 11 & -12 \\ 11 & -15 & -1 \end{pmatrix}$$

4.

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

5.

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

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

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

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

9. При $\lambda = -1$

10. Определитель: $-26\lambda - 96$, при $\lambda = [-48/13]$ ранг равен 3, иначе 4