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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -2 & -4 & 1 & 0 \\ -\frac{9}{4} & \frac{1}{6} & \frac{11}{24} & 1 \end{bmatrix}$, $U = \begin{bmatrix} -4 & -2 & 7 & 5 \\ 0 & 3 & 2 & -6 \\ 0 & 0 & 14 & -16 \\ 0 & 0 & 0 & \frac{163}{12} \end{bmatrix}$

3. $$\begin{pmatrix} 16 & 1 & -6 \\ -20 & 5 & 5 \\ 13 & 1 & 8 \end{pmatrix}$$

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

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

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

7. $\frac{5(-20)^n}{7} + \frac{2 \cdot 8^n}{7}$

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

9. При $\lambda = -9$

10. Определитель: $30\lambda + 6$, при $\lambda = [-1/5]$ ранг равен 3, иначе 4