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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ -1 & \frac{5}{3} & 1 & 0 \\ 1 & 2 & \frac{36}{35} & 1 \end{bmatrix}$, $U = \begin{bmatrix} -3 & 0 & -1 & 4 \\ 0 & -3 & 4 & -3 \\ 0 & 0 & -\frac{35}{3} & 3 \\ 0 & 0 & 0 & -\frac{178}{35} \end{bmatrix}$

3. $$\begin{pmatrix} 10 & -4 & -2 \\ 4 & -17 & 1 \\ -13 & -1 & -4 \end{pmatrix}$$

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

5. $$\sigma = (1,9,2)(3,7,5,8,4,6), ord = 6, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 9 & 6 & 8 & 7 & 4 & 3 & 5 & 1 \end{pmatrix} = (1,2,9)(3,6,4,8,5,7)$$

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

7. $-\frac{24 \cdot 48^n}{11} + \frac{35 \cdot 70^n}{11}$

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

9. При $\lambda = -3$

10. Определитель: $12\lambda - 251$, при $\lambda = [251/12]$ ранг равен 3, иначе 4