1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 7 & 1 & 0 & 0 \\ -5 & -\frac{15}{34} & 1 & 0 \\ -6 & -\frac{27}{34} & \frac{25}{539} & 1 \end{bmatrix}, U = \begin{bmatrix} 1 & 5 & -4 & 7 \\ 0 & -34 & 23 & -43 \\ 0 & 0 & -\frac{539}{34} & \frac{817}{34} \\ 0 & 0 & 0 & -\frac{1758}{539} \end{bmatrix}$

3.

$$\begin{pmatrix} 16 & -10 & 14 \\ 13 & -18 & -18 \\ -9 & -6 & 6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,8,4,7,9,6,3)(2,5), ord = 14, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 5 & 1 & 7 & 2 & 3 & 9 & 4 & 6 \end{pmatrix} = (1,8,4,7,9,6,3)(2,5)$$

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

7. $\frac{14(-28)^n}{15} + \frac{2^n}{15}$

8. $2 + 0*x + 3*x^2 + 1*x^3 + -4*x^4$

9. При $\lambda = -1$

10. Определитель: $26\lambda - 390$, при $\lambda = [15]$ ранг равен 3, иначе 4