1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 \\ \frac{3}{2} & \frac{10}{13} & 1 & 0 \\ 5 & \frac{53}{13} & -\frac{518}{241} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & -10 & 7 & -8 \\ 0 & 13 & -12 & 18 \\ 0 & 0 & -\frac{241}{26} & -\frac{115}{13} \\ 0 & 0 & 0 & -\frac{11182}{241} \end{bmatrix}$

3.

$$\begin{pmatrix} 3 & -5 & -10 \\ -13 & -11 & 6 \\ -2 & 7 & -2 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,4,9,2,8,6)(3,7,5), ord = 6, \sigma^{-739} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 9 & 5 & 1 & 7 & 8 & 3 & 2 & 4 \end{pmatrix} = (1,6,8,2,9,4)(3,5,7)$$

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

7. брак

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

9. При $\lambda = -1$

10. Определитель: $-46\lambda - 424$, при $\lambda = [-212/23]$ ранг равен 3, иначе 4