1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{9}{7} & 1 & 0 & 0 \\ -\frac{10}{7} & -7 & 1 & 0 \\ -\frac{3}{7} & -7 & \frac{46}{39} & 1 \end{bmatrix}, U = \begin{bmatrix} 7 & 0 & -2 & -5 \\ 0 & -1 & \frac{18}{7} & \frac{52}{7} \\ 0 & 0 & \frac{78}{7} & \frac{251}{7} \\ 0 & 0 & 0 & -\frac{95}{39} \end{bmatrix}$

3.

$$\begin{pmatrix} -19 & -18 & -2 \\ 18 & -2 & 3 \\ 13 & -5 & 16 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,6,8,2,3)(4,9,5,7), ord = 20, \sigma^{-733} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 1 & 6 & 7 & 9 & 2 & 5 & 3 & 4 \end{pmatrix} = (1,8,3,6,2)(4,7,5,9)$$

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

7. брак

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

9. При $\lambda = 4$

10. Определитель: $-207\lambda - 2253$, при $\lambda = [-751/69]$ ранг равен 3, иначе 4