

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.

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

5.

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

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