

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{4}{3} & 1 & 0 & 0 \\ -\frac{5}{6} & \frac{2}{3} & 1 & 0 \\ -\frac{1}{6} & 0 & \frac{3}{23} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -6 & 6 & -1 \\ 0 & -15 & 5 & -\frac{28}{3} \\ 0 & 0 & \frac{23}{3} & \frac{169}{18} \\ 0 & 0 & 0 & -\frac{35}{23} \end{bmatrix}$$

3.

$$\begin{pmatrix} 2 & 13 & 9 \\ 14 & 3 & -9 \\ 0 & 8 & -20 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3)(2, 8, 5)(4, 9)(6, 7), \text{ord} = 6, \sigma^{-773} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 8 & 1 & 9 & 2 & 7 & 6 & 5 & 4 \end{pmatrix} = (1, 3)(2, 8, 5)(4, 9)(6, 7)$$

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

7. брак

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

9. При $\lambda = 3$

10. Определитель: $715 - 37\lambda$, при $\lambda = [715/37]$ ранг равен 3, иначе 4