

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{7}{3} & 1 & 0 & 0 \\ \frac{5}{3} & -\frac{49}{59} & 1 & 0 \\ -\frac{8}{3} & \frac{76}{59} & -\frac{518}{261} & 1 \end{bmatrix}, U = \begin{bmatrix} 3 & -8 & -6 & -2 \\ 0 & -\frac{59}{3} & -5 & -\frac{20}{3} \\ 0 & 0 & \frac{522}{59} & -\frac{12}{59} \\ 0 & 0 & 0 & -\frac{361}{87} \end{bmatrix}$$

3.

$$\begin{pmatrix} -5 & 16 & 7 \\ 18 & -15 & 9 \\ -2 & -18 & -5 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 7)(2, 4)(3, 6, 9)(5, 8), \text{ord} = 6, \sigma^{-811} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 4 & 9 & 2 & 8 & 3 & 1 & 5 & 6 \end{pmatrix} = (1, 7)(2, 4)(3, 9, 6)(5, 8)$$

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

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

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

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

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

7. брак

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

9. При  $\lambda = -8$

10. Определитель:  $1152 - 216\lambda$ , при  $\lambda = [16/3]$  ранг равен 3, иначе 4