

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -\frac{3}{2} & -\frac{1}{2} & 1 & 0 \\ -\frac{1}{3} & -\frac{17}{12} & \frac{73}{36} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -2 & -8 & 5 \\ 0 & 4 & -6 & 1 \\ 0 & 0 & -6 & 0 \\ 0 & 0 & 0 & \frac{1}{12} \end{bmatrix}$$

3.

$$\begin{pmatrix} -2 & 8 & 8 \\ 2 & 5 & -10 \\ 18 & 10 & -6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 7)(2, 9, 5, 8, 6, 3, 4), \text{ord} = 14, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 9 & 4 & 2 & 8 & 3 & 1 & 6 & 5 \end{pmatrix} = (1, 7)(2, 9, 5, 8, 6, 3, 4)$$

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

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

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

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

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

$$7. \frac{15(-30)^n}{43} + \frac{28 \cdot 56^n}{43}$$

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

9. При  $\lambda = -2$

10. Определитель:  $206 - 46\lambda$ , при  $\lambda = [103/23]$  ранг равен 3, иначе 4