

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{3} & 1 & 0 & 0 \\ -1 & \frac{4}{3} & 1 & 0 \\ \frac{4}{9} & \frac{7}{9} & \frac{169}{129} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & 3 & -7 & 5 \\ 0 & 6 & -\frac{44}{3} & \frac{7}{3} \\ 0 & 0 & \frac{86}{9} & -\frac{64}{9} \\ 0 & 0 & 0 & -\frac{31}{43} \end{bmatrix}$$

3.

$$\begin{pmatrix} 1 & -3 & 4 \\ -1 & -4 & 11 \\ -4 & 1 & 19 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9, 5, 4, 7, 3)(2, 8, 6), \text{ord} = 6, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 8 & 1 & 7 & 4 & 2 & 3 & 6 & 5 \end{pmatrix} = (1, 9, 5, 4, 7, 3)(2, 8, 6)$$

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

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

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

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

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

$$7. \frac{45(-90)^n}{53} + \frac{8 \cdot 16^n}{53}$$

$$8. 3 + 2 * x + 0 * x^2 + 4 * x^3 + 1 * x^4$$

9. При $\lambda = 1$

10. Определитель: $65\lambda + 149$, при $\lambda = [-149/65]$ ранг равен 3, иначе 4