

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{5} & 1 & 0 & 0 \\ 1 & -\frac{70}{31} & 1 & 0 \\ -\frac{4}{5} & \frac{69}{31} & \frac{37}{157} & 1 \end{bmatrix}, U = \begin{bmatrix} 5 & 6 & 1 & 5 \\ 0 & \frac{31}{5} & -\frac{9}{5} & -5 \\ 0 & 0 & -\frac{157}{31} & -\frac{412}{31} \\ 0 & 0 & 0 & \frac{1454}{157} \end{bmatrix}$$

3.

$$\begin{pmatrix} 3 & -8 & 12 \\ 12 & -17 & -16 \\ 19 & 9 & -3 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 4, 5)(2, 8, 6)(7, 9), \text{ord} = 12, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 8 & 4 & 5 & 1 & 2 & 9 & 6 & 7 \end{pmatrix} = (1, 3, 4, 5)(2, 8, 6)(7, 9)$$

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

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

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

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

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

7. $(-42)^n n + (-42)^n$

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

9. При $\lambda = -4$

10. Определитель: $47\lambda - 315$, при $\lambda = [315/47]$ ранг равен 3, иначе 4