

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 9 & 1 & 0 & 0 \\ 0 & \frac{7}{72} & 1 & 0 \\ 0 & \frac{1}{72} & -\frac{439}{23} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & -9 & 8 & -9 \\ 0 & 72 & -79 & 89 \\ 0 & 0 & -\frac{23}{72} & -\frac{1199}{72} \\ 0 & 0 & 0 & -\frac{7454}{23} \end{bmatrix}$$

3.

$$\begin{pmatrix} -15 & -18 & 4 \\ 0 & -6 & 15 \\ -9 & -7 & 15 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 7)(2, 9, 6, 4)(3, 8), \text{ord} = 12, \sigma^{-827} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 5 & 9 & 8 & 2 & 7 & 4 & 1 & 3 & 6 \end{pmatrix} = (1, 5, 7)(2, 9, 6, 4)(3, 8)$$

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

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

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

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

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

$$7. -\frac{12(-24)^n}{13} + \frac{25(-50)^n}{13}$$

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

9. При $\lambda = -6$

10. Определитель: $1150 - 170\lambda$, при $\lambda = [115/17]$ ранг равен 3, иначе 4