

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 & 0 \\ \frac{1}{2} & \frac{1}{11} & 1 & 0 \\ -\frac{9}{10} & \frac{61}{55} & -\frac{4}{125} & 1 \end{bmatrix}, U = \begin{bmatrix} -10 & -8 & 4 & 3 \\ 0 & -11 & -3 & -\frac{9}{2} \\ 0 & 0 & \frac{25}{11} & -\frac{100}{11} \\ 0 & 0 & 0 & \frac{72}{5} \end{bmatrix}$$

3.

$$\begin{pmatrix} 3 & -12 & 19 \\ -16 & -6 & -6 \\ 8 & -4 & -8 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 9, 8, 3, 5, 7)(2, 6), \text{ord} = 14, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 6 & 8 & 1 & 3 & 2 & 5 & 9 & 4 \end{pmatrix} = (1, 7, 5, 3, 8, 9, 4)(2, 6)$$

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

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

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

$$7. \frac{9(-9)^n}{11} + \frac{2 \cdot 2^n}{11}$$

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

9. При  $\lambda = 4$

10. Определитель:  $-11\lambda - 249$ , при  $\lambda = [-249/11]$  ранг равен 3, иначе 4