

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 & 0 \\ \frac{1}{8} & \frac{43}{12} & 1 & 0 \\ \frac{9}{8} & -\frac{15}{4} & -\frac{3}{4} & 1 \end{bmatrix}, U = \begin{bmatrix} -8 & -3 & 2 & 2 \\ 0 & \frac{3}{2} & 3 & 2 \\ 0 & 0 & -20 & -\frac{125}{12} \\ 0 & 0 & 0 & -\frac{89}{16} \end{bmatrix}$$

3.

$$\begin{pmatrix} 5 & -17 & 16 \\ 10 & 1 & -13 \\ -16 & 16 & -18 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 7, 8, 4)(2, 6, 9, 5), \text{ord} = 20, \sigma^{-733} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 5 & 8 & 3 & 9 & 2 & 4 & 1 & 6 \end{pmatrix} = (1, 7, 4, 3, 8)(2, 5, 9, 6)$$

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

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

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

$$7. \frac{(-4)^n}{19} + \frac{18 \cdot 72^n}{19}$$

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

9. При  $\lambda = 1$

10. Определитель:  $127\lambda + 885$ , при  $\lambda = [-885/127]$  ранг равен 3, иначе 4