

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{2}{7} & 1 & 0 & 0 \\ \frac{5}{7} & -\frac{17}{10} & 1 & 0 \\ \frac{10}{7} & \frac{1}{10} & -\frac{19}{293} & 1 \end{bmatrix}, U = \begin{bmatrix} -7 & 1 & 5 & 7 \\ 0 & -\frac{30}{7} & -\frac{73}{7} & -8 \\ 0 & 0 & -\frac{293}{10} & -\frac{113}{5} \\ 0 & 0 & 0 & -\frac{5762}{293} \end{bmatrix}$$

3.

$$\begin{pmatrix} 3 & -7 & 9 \\ -9 & 3 & -18 \\ -15 & 15 & 2 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 5, 7, 8, 6, 3)(2, 9), \text{ord} = 14, \sigma^{-811} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 9 & 1 & 5 & 7 & 3 & 8 & 6 & 2 \end{pmatrix} = (1, 4, 5, 7, 8, 6, 3)(2, 9)$$

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

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

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

7. $-9(-36)^n + 10(-40)^n$

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

9. При $\lambda = -7$

10. Определитель: $-8\lambda - 305$, при $\lambda = [-305/8]$ ранг равен 3, иначе 4