

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -2 & 1 & 0 & 0 \\ \frac{1}{4} & \frac{41}{32} & 1 & 0 \\ \frac{5}{2} & \frac{25}{16} & \frac{1150}{719} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & 1 & 5 & -6 \\ 0 & -8 & 15 & -22 \\ 0 & 0 & -\frac{719}{32} & \frac{443}{16} \\ 0 & 0 & 0 & -\frac{1373}{719} \end{bmatrix}$$

3.

$$\begin{pmatrix} -18 & 16 & 1 \\ 1 & -3 & -5 \\ 7 & 1 & 9 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 8)(2, 3, 7, 9, 4, 5), \text{ord} = 6, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 5 & 2 & 9 & 4 & 1 & 3 & 6 & 7 \end{pmatrix} = (1, 8, 6)(2, 5, 4, 9, 7, 3)$$

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

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

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

$$7. \frac{2(-28)^n}{7} + \frac{5 \cdot 70^n}{7}$$

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

9. При $\lambda = -4$

10. Определитель: $60\lambda + 2022$, при $\lambda = [-337/10]$ ранг равен 3, иначе 4