

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{4}{7} & 1 & 0 & 0 \\ -\frac{9}{7} & -\frac{11}{48} & 1 & 0 \\ -\frac{10}{7} & \frac{25}{24} & \frac{38}{43} & 1 \end{bmatrix}, U = \begin{bmatrix} 7 & -5 & -10 & 1 \\ 0 & -\frac{48}{7} & \frac{16}{7} & \frac{11}{7} \\ 0 & 0 & -\frac{43}{3} & -\frac{17}{48} \\ 0 & 0 & 0 & -\frac{249}{86} \end{bmatrix}$$

3.

$$\begin{pmatrix} -20 & -17 & -4 \\ -11 & -17 & -7 \\ -19 & -10 & 13 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 5, 9)(2, 3)(6, 7, 8), \text{ord} = 12, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 3 & 2 & 5 & 9 & 8 & 6 & 7 & 1 \end{pmatrix} = (1, 4, 5, 9)(2, 3)(6, 8, 7)$$

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

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

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

$$7. \frac{(-20)^n}{4} + \frac{3 \cdot 60^n}{4}$$

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

9. При $\lambda = -8$

10. Определитель: $111\lambda - 647$, при $\lambda = [647/111]$ ранг равен 3, иначе 4