

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{7}{8} & 1 & 0 & 0 \\ \frac{3}{8} & -\frac{3}{49} & 1 & 0 \\ -\frac{3}{8} & -\frac{5}{49} & \frac{191}{144} & 1 \end{bmatrix}, U = \begin{bmatrix} -8 & -7 & -8 & 3 \\ 0 & \frac{49}{8} & 2 & -\frac{93}{8} \\ 0 & 0 & -\frac{288}{49} & -\frac{335}{49} \\ 0 & 0 & 0 & \frac{2305}{144} \end{bmatrix}$$

3.

$$\begin{pmatrix} -12 & 6 & -9 \\ 18 & -7 & 16 \\ 3 & -2 & -11 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8, 3, 2, 4)(5, 6, 9, 7), \text{ord} = 20, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 1 & 4 & 8 & 6 & 9 & 5 & 2 & 7 \end{pmatrix} = (1, 3, 4, 8, 2)(5, 6, 9, 7)$$

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

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

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

$$7. -\frac{3(-21)^n}{2} + \frac{5(-35)^n}{2}$$

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

9. При $\lambda = -1$

10. Определитель: $26\lambda + 118$, при $\lambda = [-59/13]$ ранг равен 3, иначе 4