

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{7}{8} & 1 & 0 & 0 \\ 0 & -\frac{24}{103} & 1 & 0 \\ \frac{3}{8} & -\frac{29}{103} & -\frac{55}{299} & 1 \end{bmatrix}, U = \begin{bmatrix} -8 & 9 & -10 & -6 \\ 0 & -\frac{103}{8} & \frac{67}{4} & \frac{13}{4} \\ 0 & 0 & \frac{299}{103} & \frac{696}{103} \\ 0 & 0 & 0 & \frac{1916}{299} \end{bmatrix}$$

3.

$$\begin{pmatrix} -3 & 8 & 18 \\ -13 & -1 & -16 \\ -12 & 3 & -10 \end{pmatrix}$$

4.

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

5.

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

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

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

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

$$7. \frac{3(-9)^n}{4} + \frac{3^n}{4}$$

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

9. При $\lambda = -3$

10. Определитель: $-15\lambda - 71$, при $\lambda = [-71/15]$ ранг равен 3, иначе 4