

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{5}{7} & 1 & 0 & 0 \\ \frac{10}{7} & -\frac{3}{2} & 1 & 0 \\ -\frac{2}{7} & -\frac{3}{10} & \frac{357}{1115} & 1 \end{bmatrix}, U = \begin{bmatrix} -7 & 7 & -4 & 9 \\ 0 & 10 & \frac{29}{7} & \frac{108}{7} \\ 0 & 0 & \frac{223}{14} & \frac{16}{7} \\ 0 & 0 & 0 & -\frac{2823}{1115} \end{bmatrix}$$

3.

$$\begin{pmatrix} 0 & -1 & -3 \\ -4 & -4 & -1 \\ 8 & -3 & 12 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 7, 8, 3)(2, 9)(4, 6), \text{ord} = 10, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 9 & 5 & 6 & 8 & 4 & 3 & 1 & 2 \end{pmatrix} = (1, 7, 3, 5, 8)(2, 9)(4, 6)$$

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

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

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

7. $4 \cdot 12^n - 3 \cdot 9^n$

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

9. При $\lambda = -8$

10. Определитель: $-58\lambda - 1384$, при $\lambda = [-692/29]$ ранг равен 3, иначе 4