

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{7}{10} & 1 & 0 & 0 \\ -\frac{9}{10} & -\frac{83}{59} & 1 & 0 \\ 0 & 0 & -\frac{177}{787} & 1 \end{bmatrix}, U = \begin{bmatrix} -10 & -7 & -6 & 0 \\ 0 & \frac{59}{10} & -\frac{14}{5} & -5 \\ 0 & 0 & -\frac{787}{59} & -\frac{415}{59} \\ 0 & 0 & 0 & \frac{2690}{787} \end{bmatrix}$$

3.

$$\begin{pmatrix} 3 & 1 & 17 \\ -4 & -3 & -9 \\ 7 & 18 & -15 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9, 6, 3)(2, 7)(4, 5, 8), \text{ord} = 12, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 7 & 6 & 5 & 8 & 9 & 2 & 4 & 1 \end{pmatrix} = (1, 3, 6, 9)(2, 7)(4, 5, 8)$$

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

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

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

$$7. \frac{8(-24)^n}{23} + \frac{15 \cdot 45^n}{23}$$

$$8. 0 + 1 * x + -1 * x^2 + -1 * x^3 + 1 * x^4$$

9. При $\lambda = 3$

10. Определитель: $12\lambda + 48$, при $\lambda = [-4]$ ранг равен 3, иначе 4