

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{3}{7} & 1 & 0 & 0 \\ -\frac{1}{7} & -2 & 1 & 0 \\ -\frac{1}{7} & -\frac{9}{2} & \frac{731}{364} & 1 \end{bmatrix}, U = \begin{bmatrix} -7 & 7 & -3 & 0 \\ 0 & 2 & -\frac{65}{7} & 9 \\ 0 & 0 & -26 & 8 \\ 0 & 0 & 0 & \frac{5539}{182} \end{bmatrix}$$

3.

$$\begin{pmatrix} 8 & 3 & 7 \\ -2 & 10 & 1 \\ -19 & 18 & 18 \end{pmatrix}$$

4.

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

5.

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

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

$$7. \frac{(-3)^n}{6} + \frac{5 \cdot 15^n}{6}$$

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

9. При $\lambda = 1$

10. Определитель: $69\lambda + 150$, при $\lambda = [-50/23]$ ранг равен 3, иначе 4