

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{3}{2} & 1 & 0 & 0 \\ -\frac{1}{2} & \frac{17}{21} & 1 & 0 \\ -\frac{7}{6} & \frac{85}{63} & -\frac{185}{99} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & 7 & 5 & 4 \\ 0 & \frac{21}{2} & \frac{3}{2} & 13 \\ 0 & 0 & -\frac{33}{7} & -\frac{326}{21} \\ 0 & 0 & 0 & -\frac{14518}{297} \end{bmatrix}$$

3.

$$\begin{pmatrix} -1 & -14 & 18 \\ 16 & 11 & 9 \\ -14 & 2 & -14 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9)(2, 6, 3)(4, 5, 8, 7), \text{ord} = 12, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 6 & 2 & 7 & 4 & 3 & 8 & 5 & 1 \end{pmatrix} = (1, 9)(2, 6, 3)(4, 7, 8, 5)$$

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

$$7. \frac{2(-36)^n}{7} + \frac{5 \cdot 90^n}{7}$$

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

9. При $\lambda = -3$

10. Определитель: $112 - 14\lambda$, при $\lambda = [8]$ ранг равен 3, иначе 4