

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & \frac{7}{5} & 1 & 0 \\ -1 & -\frac{4}{5} & \frac{47}{4} & 1 \end{bmatrix}, U = \begin{bmatrix} -6 & 5 & 5 & 8 \\ 0 & 5 & -2 & -6 \\ 0 & 0 & \frac{4}{5} & \frac{27}{5} \\ 0 & 0 & 0 & -\frac{241}{4} \end{bmatrix}$$

3.

$$\begin{pmatrix} -13 & -4 & -17 \\ 0 & 2 & 10 \\ -17 & 14 & -20 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 6)(2, 7)(4, 8, 5, 9), ord = 12, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 7 & 1 & 8 & 9 & 3 & 2 & 5 & 4 \end{pmatrix} = (1, 6, 3)(2, 7)(4, 8, 5, 9)$$

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

$$7. -\frac{(-18)^n}{3} + \frac{4(-72)^n}{3}$$

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

9. При $\lambda = 3$

10. Определитель: $-21\lambda - 805$, при $\lambda = [-115/3]$ ранг равен 3, иначе 4