

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ \frac{9}{5} & -\frac{57}{25} & 1 & 0 \\ 0 & \frac{7}{5} & -\frac{110}{357} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & -3 & -5 & -7 \\ 0 & -5 & 1 & -15 \\ 0 & 0 & \frac{357}{25} & -\frac{118}{5} \\ 0 & 0 & 0 & \frac{2045}{357} \end{bmatrix}$$

3.

$$\begin{pmatrix} -7 & -20 & -18 \\ -13 & 0 & 18 \\ -1 & 2 & 10 \end{pmatrix}$$

4.

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

5.

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

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

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

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

$$7. -\frac{16 \cdot 48^n}{5} + \frac{21 \cdot 63^n}{5}$$

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

9. При $\lambda = 9$

10. Определитель: $136\lambda + 478$, при $\lambda = [-239/68]$ ранг равен 3, иначе 4