

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 \\ 2 & \frac{11}{9} & 1 & 0 \\ \frac{2}{3} & \frac{13}{9} & \frac{35}{17} & 1 \end{bmatrix}, U = \begin{bmatrix} 3 & 9 & -8 & 4 \\ 0 & -9 & 15 & -5 \\ 0 & 0 & -\frac{34}{3} & -\frac{80}{9} \\ 0 & 0 & 0 & \frac{2885}{153} \end{bmatrix}$$

3.

$$\begin{pmatrix} -2 & -3 & 15 \\ 15 & 6 & -9 \\ -13 & -8 & -9 \end{pmatrix}$$

4.

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

5.

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

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

$$7. \frac{8(-40)^n}{17} + \frac{9 \cdot 45^n}{17}$$

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

9. При $\lambda = 3$

10. Определитель: $105\lambda + 168$, при $\lambda = [-8/5]$ ранг равен 3, иначе 4