

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{2} & 1 & 0 & 0 \\ 9 & 9 & 1 & 0 \\ 8 & 4 & 26 & 1 \\ 4 & 30 & 225 & 1 \end{bmatrix}, U = \begin{bmatrix} -8 & -7 & -1 & -3 \\ 0 & \frac{15}{2} & -\frac{9}{2} & \frac{13}{2} \\ 0 & 0 & \frac{45}{4} & -\frac{53}{4} \\ 0 & 0 & 0 & -\frac{278}{225} \end{bmatrix}$$

3.

$$\begin{pmatrix} -13 & 5 & 3 \\ -8 & 8 & -15 \\ 15 & -6 & 14 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 2, 5, 4)(6, 8, 7, 9), \text{ord} = 20, \sigma^{-811} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 3 & 1 & 5 & 2 & 8 & 9 & 7 & 6 \end{pmatrix} = (1, 4, 5, 2, 3)(6, 8, 7, 9)$$

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

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

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

$$7. \frac{8 \cdot 48^n}{7} - \frac{6^n}{7}$$

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

9. При $\lambda = 7$

10. Определитель: $40\lambda - 160$, при $\lambda = [4]$ ранг равен 3, иначе 4