

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -\frac{5}{2} & \frac{3}{2} & 1 & 0 \\ -3 & 3 & \frac{6}{5} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & -5 & -8 & -6 \\ 0 & -3 & -4 & -7 \\ 0 & 0 & -10 & -\frac{19}{2} \\ 0 & 0 & 0 & \frac{42}{5} \end{bmatrix}$$

3.

$$\begin{pmatrix} 17 & 5 & -16 \\ 4 & -12 & 9 \\ -13 & 9 & -19 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6)(2, 8, 5, 9, 3)(4, 7), \text{ord} = 10, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 3 & 9 & 7 & 8 & 1 & 4 & 2 & 5 \end{pmatrix} = (1, 6)(2, 3, 9, 5, 8)(4, 7)$$

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

$$7. \frac{2(-32)^n}{5} + \frac{3 \cdot 48^n}{5}$$

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

9. При $\lambda = 7$

10. Определитель: $200 - 70\lambda$, при $\lambda = [20/7]$ ранг равен 3, иначе 4