

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 & 0 \\ -\frac{1}{10} & 1 & 1 & 0 \\ -\frac{3}{5} & \frac{6}{5} & -\frac{36}{11} & 1 \end{bmatrix}, U = \begin{bmatrix} -10 & 5 & 2 & 0 \\ 0 & \frac{5}{2} & 2 & -3 \\ 0 & 0 & \frac{11}{5} & 4 \\ 0 & 0 & 0 & \frac{533}{55} \end{bmatrix}$$

3.

$$\begin{pmatrix} 12 & 6 & 1 \\ 5 & 15 & 8 \\ -13 & 3 & 14 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 2, 9)(3, 4)(5, 7, 8), \text{ord} = 12, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 6 & 4 & 3 & 7 & 1 & 8 & 5 & 2 \end{pmatrix} = (1, 9, 2, 6)(3, 4)(5, 7, 8)$$

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

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

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

$$7. \frac{9 \cdot 18^n}{7} - \frac{2 \cdot 4^n}{7}$$

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

9. При $\lambda = -6$

10. Определитель: $104 - 98\lambda$, при $\lambda = [52/49]$ ранг равен 3, иначе 4