

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 \\ 3 & 1 & 0 & 0 \\ 4 & \frac{1}{2} & 1 & 0 \\ 5 & \frac{9}{10} & \frac{97}{105} & 1 \end{bmatrix}, U = \begin{bmatrix} -3 & 3 & -1 & 7 \\ 0 & -10 & \frac{29}{3} & -\frac{44}{3} \\ 0 & 0 & -\frac{21}{2} & -2 \\ 0 & 0 & 0 & \frac{127}{21} \end{bmatrix}$$

3.

$$\begin{pmatrix} 7 & 19 & 1 \\ 9 & 10 & -12 \\ -13 & 13 & -15 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 7, 6, 9, 3)(2, 4, 8, 5), \text{ord} = 20, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 4 & 7 & 8 & 2 & 3 & 9 & 5 & 1 \end{pmatrix} = (1, 6, 3, 7, 9)(2, 4, 8, 5)$$

6. Id; (2, 5) (6, 7); (2, 6, 5, 7); (2, 7, 5, 6);

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

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

$$7. \frac{10 \cdot 20^n}{7} - \frac{3 \cdot 6^n}{7}$$

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

9. При  $\lambda = -3$

10. Определитель:  $96 - 32\lambda$ , при  $\lambda = [3]$  ранг равен 3, иначе 4