

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 & 0 \\ -\frac{7}{2} & -3 & 1 & 0 \\ -1 & -\frac{8}{3} & \frac{5}{4} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 0 & -2 & 2 \\ 0 & 3 & 6 & 5 \\ 0 & 0 & 8 & 14 \\ 0 & 0 & 0 & -\frac{31}{6} \end{bmatrix}$$

3.

$$\begin{pmatrix} -14 & -11 & -20 \\ -9 & -14 & -19 \\ -19 & -7 & 6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 7, 8, 6)(2, 3, 9, 5), \text{ord} = 20, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 5 & 2 & 1 & 9 & 8 & 4 & 7 & 3 \end{pmatrix} = (1, 6, 8, 7, 4)(2, 5, 9, 3)$$

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

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

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

$$7. -\frac{9 \cdot 18^n}{7} + \frac{16 \cdot 32^n}{7}$$

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

9. При  $\lambda = -7$

10. Определитель:  $91\lambda + 107$ , при  $\lambda = [-107/91]$  ранг равен 3, иначе 4