

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 5 & 1 & 0 & 0 \\ -1 & \frac{3}{2} & 1 & 0 \\ -3 & -\frac{1}{4} & \frac{1}{9} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & -2 & -7 & -2 \\ 0 & 4 & 32 & 6 \\ 0 & 0 & -63 & -2 \\ 0 & 0 & 0 & -\frac{167}{18} \end{bmatrix}$$

3.

$$\begin{pmatrix} -4 & 0 & -9 \\ -7 & 9 & 6 \\ -17 & -11 & 2 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6)(2, 3, 7, 4, 5, 8, 9), \text{ord} = 14, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 8 & 9 & 3 & 7 & 1 & 2 & 4 & 5 \end{pmatrix} = (1, 6)(2, 8, 4, 3, 9, 5, 7)$$

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

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

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

$$7. -\frac{3 \cdot 54^n}{2} + \frac{5 \cdot 90^n}{2}$$

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

9. При  $\lambda = -8$

10. Определитель:  $31\lambda - 2$ , при  $\lambda = [2/31]$  ранг равен 3, иначе 4