

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 6 & 1 & 0 & 0 \\ 0 & -\frac{1}{3} & 1 & 0 \\ -8 & -\frac{49}{30} & \frac{35}{29} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & -6 & 9 & 2 \\ 0 & 30 & -60 & -16 \\ 0 & 0 & -29 & -\frac{43}{3} \\ 0 & 0 & 0 & \frac{1474}{145} \end{bmatrix}$$

3.

$$\begin{pmatrix} -15 & 10 & -10 \\ 3 & -3 & 4 \\ -5 & 3 & -15 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 3, 9, 6, 7, 4)(2, 8), \text{ord} = 14, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 8 & 7 & 3 & 6 & 1 & 5 & 2 & 4 \end{pmatrix} = (1, 9, 4, 3, 7, 5, 6)(2, 8)$$

6. Id; (2, 3) (5, 6); (2, 5, 3, 6); (2, 6, 3, 5);

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

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

$$7. -\frac{4 \cdot 32^n}{3} + \frac{7 \cdot 56^n}{3}$$

$$8. -3 + -3 * x + 2 * x^2 + 0 * x^3 + 4 * x^4$$

9. При $\lambda = 8$

10. Определитель: $228 - 76\lambda$, при $\lambda = [3]$ ранг равен 3, иначе 4