

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 6 & 1 & 0 & 0 \\ 2 & \frac{1}{3} & 1 & 0 \\ 5 & -\frac{22}{9} & \frac{14}{3} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & -1 & 0 & 3 \\ 0 & -\frac{9}{5} & 6 & -\frac{28}{5} \\ 0 & 0 & 4 & \frac{5}{3} \\ 0 & 0 & 0 & -\frac{80}{3} \end{bmatrix}$$

3.

$$\begin{pmatrix} -20 & -18 & -6 \\ 7 & -6 & -5 \\ -7 & -4 & -3 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 2, 7)(3, 8, 9)(4, 5), \text{ord} = 12, \sigma^{-827} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 7 & 8 & 5 & 4 & 2 & 1 & 9 & 3 \end{pmatrix} = (1, 6, 2, 7)(3, 8, 9)(4, 5)$$

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

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

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

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

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

$$7. -\frac{16(-32)^n}{5} + \frac{21(-42)^n}{5}$$

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

9. При  $\lambda = 6$

10. Определитель:  $-4\lambda - 84$ , при  $\lambda = [-21]$  ранг равен 3, иначе 4