

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{3}{2} & 1 & 0 & 0 \\ 5 & -\frac{26}{15} & 1 & 0 \\ -4 & \frac{8}{3} & -\frac{85}{56} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & 3 & 0 & -8 \\ 0 & \frac{15}{2} & -2 & -17 \\ 0 & 0 & -\frac{112}{15} & \frac{263}{15} \\ 0 & 0 & 0 & \frac{1901}{56} \end{bmatrix}$$

3.

$$\begin{pmatrix} 2 & 4 & 16 \\ -15 & -9 & -3 \\ 12 & 5 & -20 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 2, 4, 7, 8)(3, 9, 5, 6), \text{ord} = 20, \sigma^{-733} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 7 & 6 & 8 & 9 & 5 & 1 & 2 & 3 \end{pmatrix} = (1, 4, 8, 2, 7)(3, 6, 5, 9)$$

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

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

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

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

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

$$7. -\frac{3 \cdot 3^n}{29} + \frac{32 \cdot 32^n}{29}$$

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

9. При  $\lambda = -1$

10. Определитель:  $30 - 6\lambda$ , при  $\lambda = [5]$  ранг равен 3, иначе 4