

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{3} & 1 & 0 & 0 \\ \frac{5}{3} & -\frac{19}{7} & 1 & 0 \\ -\frac{5}{3} & \frac{53}{14} & -\frac{103}{23} & 1 \end{bmatrix}, U = \begin{bmatrix} 3 & 7 & 1 & 0 \\ 0 & \frac{14}{3} & -\frac{4}{3} & -7 \\ 0 & 0 & -\frac{23}{7} & -24 \\ 0 & 0 & 0 & -\frac{3909}{46} \end{bmatrix}$$

3.

$$\begin{pmatrix} -20 & 14 & 6 \\ -8 & -17 & -10 \\ -11 & 11 & 3 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 6)(2, 7)(3, 4, 9, 8), \text{ord} = 12, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 7 & 4 & 9 & 1 & 5 & 2 & 3 & 8 \end{pmatrix} = (1, 6, 5)(2, 7)(3, 4, 9, 8)$$

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

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

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

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

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

$$7. -\frac{9 \cdot 18^n}{11} + \frac{20 \cdot 40^n}{11}$$

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

9. При $\lambda = -6$

10. Определитель: $42\lambda - 535$, при $\lambda = [535/42]$ ранг равен 3, иначе 4