

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{5}{4} & 1 & 0 & 0 \\ \frac{9}{4} & \frac{7}{5} & 1 & 0 \\ -\frac{3}{4} & -\frac{2}{5} & \frac{13}{162} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & 8 & 9 & -8 \\ 0 & -10 & -\frac{81}{4} & 11 \\ 0 & 0 & \frac{81}{10} & \frac{53}{5} \\ 0 & 0 & 0 & -\frac{883}{162} \end{bmatrix}$$

3.

$$\begin{pmatrix} 19 & 7 & 2 \\ 11 & 9 & -15 \\ 0 & 18 & 11 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 9)(2, 8, 6, 5, 3, 7), \text{ord} = 6, \sigma^{-719} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 8 & 7 & 9 & 3 & 5 & 2 & 6 & 1 \end{pmatrix} = (1, 4, 9)(2, 8, 6, 5, 3, 7)$$

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

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

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

$$7. -\frac{21 \cdot 21^n}{29} + \frac{50 \cdot 50^n}{29}$$

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

9. При $\lambda = -4$

10. Определитель: $18\lambda - 159$, при $\lambda = [53/6]$ ранг равен 3, иначе 4