

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{7}{4} & 1 & 0 & 0 \\ \frac{3}{4} & -\frac{5}{53} & 1 & 0 \\ \frac{1}{4} & \frac{17}{53} & -\frac{17}{5} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & -7 & 1 & 9 \\ 0 & -\frac{53}{4} & -\frac{17}{4} & \frac{23}{4} \\ 0 & 0 & \frac{45}{53} & \frac{148}{53} \\ 0 & 0 & 0 & -\frac{13}{5} \end{bmatrix}$$

3.

$$\begin{pmatrix} -12 & -2 & 7 \\ -19 & -20 & 8 \\ -18 & 3 & -6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8, 6, 2, 3)(4, 7, 5, 9), \text{ord} = 20, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 8 & 6 & 7 & 9 & 1 & 5 & 3 & 4 \end{pmatrix} = (1, 2, 8, 3, 6)(4, 7, 5, 9)$$

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

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

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

$$7. \frac{8(-72)^n}{9} + \frac{9^n}{9}$$

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

9. При  $\lambda = -10$

10. Определитель:  $-54\lambda - 68$ , при  $\lambda = [-34/27]$  ранг равен 3, иначе 4