

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{9} & 1 & 0 & 0 \\ \frac{4}{9} & -\frac{53}{31} & 1 & 0 \\ \frac{2}{3} & \frac{69}{31} & \frac{669}{187} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & 7 & 7 & 3 \\ 0 & -\frac{31}{9} & \frac{32}{9} & \frac{17}{3} \\ 0 & 0 & -\frac{187}{31} & \frac{538}{31} \\ 0 & 0 & 0 & -\frac{16213}{187} \end{bmatrix}$$

3.

$$\begin{pmatrix} 0 & -1 & -19 \\ 2 & 11 & -18 \\ 11 & -15 & 7 \end{pmatrix}$$

4.

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

5.

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

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

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

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

$$7. -\frac{5(-20)^n}{11} + \frac{16(-64)^n}{11}$$

$$8. 0 + 2 * x + 0 * x^2 + 1 * x^3 + 4 * x^4$$

9. При $\lambda = 5$

10. Определитель: $-45\lambda - 195$, при $\lambda = [-13/3]$ ранг равен 3, иначе 4