

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ \frac{7}{5} & -\frac{44}{5} & 1 & 0 \\ -\frac{9}{5} & \frac{8}{5} & \frac{3}{7} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & -2 & 4 & -4 \\ 0 & -1 & 2 & -6 \\ 0 & 0 & 7 & -\frac{196}{5} \\ 0 & 0 & 0 & \frac{106}{5} \end{bmatrix}$$

3.

$$\begin{pmatrix} -18 & 2 & 2 \\ 16 & -14 & -17 \\ -17 & -6 & 5 \end{pmatrix}$$

4.

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

5.

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

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

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

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

$$7. \frac{(-10)^n}{3} + \frac{2 \cdot 20^n}{3}$$

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

9. При $\lambda = -7$

10. Определитель: $2\lambda + 10$, при $\lambda = [-5]$ ранг равен 3, иначе 4