

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{2} & 1 & 0 & 0 \\ -\frac{4}{9} & \frac{1}{5} & 1 & 0 \\ -\frac{7}{4} & \frac{6}{5} & \frac{31}{136} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & 0 & 8 & -2 \\ 0 & 5 & -1 & -8 \\ 0 & 0 & \frac{136}{5} & \frac{51}{10} \\ 0 & 0 & 0 & \frac{15}{16} \end{bmatrix}$$

3.

$$\begin{pmatrix} 2 & 4 & 16 \\ 6 & 19 & -10 \\ 16 & -17 & -4 \end{pmatrix}$$

4.

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

5.

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

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

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

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

7. брак

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

9. При $\lambda = -10$

10. Определитель: $473 - 32\lambda$, при $\lambda = [473/32]$ ранг равен 3, иначе 4