

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ -\frac{1}{9} & -\frac{35}{9} & 1 & 0 \\ -\frac{8}{9} & -\frac{2}{9} & -\frac{85}{462} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & -5 & -7 & -8 \\ 0 & 2 & 8 & 7 \\ 0 & 0 & \frac{154}{3} & \frac{271}{6} \\ 0 & 0 & 0 & \frac{1621}{924} \end{bmatrix}$$

3.

$$\begin{pmatrix} -4 & -18 & -15 \\ 18 & 15 & -16 \\ 18 & 1 & -20 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 2, 5, 7, 4, 6, 3)(8, 9), \text{ord} = 14, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 5 & 1 & 6 & 7 & 3 & 4 & 9 & 8 \end{pmatrix} = (1, 2, 5, 7, 4, 6, 3)(8, 9)$$

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

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

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

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

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

$$7. \frac{16 \cdot 32^n}{13} - \frac{3 \cdot 6^n}{13}$$

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

9. При $\lambda = -10$

10. Определитель: $357 - 63\lambda$, при $\lambda = [17/3]$ ранг равен 3, иначе 4