

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 8 & 1 & 0 & 0 \\ 5 & -\frac{9}{10} & 1 & 0 \\ 7 & -\frac{1}{2} & \frac{119}{125} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & 0 & 6 & 9 \\ 0 & -10 & -45 & -69 \\ 0 & 0 & -\frac{125}{2} & -\frac{1161}{10} \\ 0 & 0 & 0 & \frac{8767}{625} \end{bmatrix}$$

3.

$$\begin{pmatrix} 1 & 14 & 5 \\ -18 & 3 & -14 \\ 3 & -19 & -17 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 3, 7, 8)(2, 6, 4, 9), \text{ord} = 20, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 6 & 1 & 9 & 8 & 4 & 5 & 3 & 2 \end{pmatrix} = (1, 7, 5, 8, 3)(2, 6, 4, 9)$$

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

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

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

7. $\frac{9 \cdot 63^n}{8} - \frac{7^n}{8}$

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

9. При $\lambda = -8$

10. Определитель: $60\lambda + 351$, при $\lambda = [-117/20]$ ранг равен 3, иначе 4