

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{4}{5} & 1 & 0 & 0 \\ \frac{9}{10} & \frac{1}{3} & 1 & 0 \\ 1 & -\frac{7}{6} & -\frac{32}{35} & 1 \end{bmatrix}, U = \begin{bmatrix} -10 & 0 & -7 & -5 \\ 0 & -6 & -\frac{48}{5} & -6 \\ 0 & 0 & \frac{7}{2} & \frac{11}{2} \\ 0 & 0 & 0 & \frac{106}{35} \end{bmatrix}$$

3.

$$\begin{pmatrix} 11 & -17 & -6 \\ -15 & -1 & 7 \\ 19 & -2 & 12 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 2)(3, 8, 6, 5, 7, 4, 9), \text{ord} = 14, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 1 & 7 & 6 & 3 & 9 & 8 & 4 & 5 \end{pmatrix} = (1, 2)(3, 7, 8, 4, 6, 9, 5)$$

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

$$7. -\frac{(-6)^n}{11} + \frac{12(-72)^n}{11}$$

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

9. При $\lambda = -1$

10. Определитель: $140\lambda + 184$, при $\lambda = [-46/35]$ ранг равен 3, иначе 4