

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{5} & 1 & 0 & 0 \\ \frac{4}{5} & -\frac{2}{3} & 1 & 0 \\ \frac{1}{5} & -\frac{13}{3} & -\frac{41}{4} & 1 \end{bmatrix}, U = \begin{bmatrix} 5 & 1 & 3 & 7 \\ 0 & \frac{6}{5} & \frac{48}{5} & -\frac{33}{5} \\ 0 & 0 & -4 & -2 \\ 0 & 0 & 0 & -\frac{95}{2} \end{bmatrix}$$

3.

$$\begin{pmatrix} 6 & -20 & -8 \\ 5 & -14 & 1 \\ 8 & 5 & -18 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 3, 2)(4, 9, 5)(7, 8), \text{ord} = 12, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 1 & 2 & 5 & 9 & 3 & 8 & 7 & 4 \end{pmatrix} = (1, 6, 3, 2)(4, 5, 9)(7, 8)$$

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

$$7. -\frac{16(-16)^n}{19} + \frac{35(-35)^n}{19}$$

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

9. При $\lambda = -3$

10. Определитель: $-205\lambda - 405$, при $\lambda = [-81/41]$ ранг равен 3, иначе 4