

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{7} & 1 & 0 & 0 \\ -\frac{3}{7} & -\frac{80}{29} & 1 & 0 \\ -\frac{10}{7} & -\frac{94}{29} & \frac{46}{41} & 1 \end{bmatrix}, U = \begin{bmatrix} 7 & 8 & 3 & -6 \\ 0 & -\frac{29}{7} & -\frac{17}{7} & -\frac{8}{7} \\ 0 & 0 & -\frac{41}{29} & -\frac{224}{29} \\ 0 & 0 & 0 & -\frac{189}{41} \end{bmatrix}$$

3.

$$\begin{pmatrix} -17 & -15 & 1 \\ -19 & 4 & 13 \\ -7 & -1 & -7 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 7, 9)(2, 6, 4, 8, 3), \text{ord} = 20, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 8 & 4 & 2 & 1 & 3 & 5 & 6 & 7 \end{pmatrix} = (1, 9, 7, 5)(2, 8, 6, 3, 4)$$

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

7. $\frac{(-40)^n}{2} + \frac{40^n}{2}$

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

9. При $\lambda = 9$

10. Определитель: $160\lambda + 620$, при $\lambda = [-31/8]$ ранг равен 3, иначе 4