

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ 2 & -\frac{2}{5} & 1 & 0 \\ \frac{3}{5} & \frac{28}{25} & -\frac{269}{55} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & 4 & 4 & 3 \\ 0 & 5 & 3 & -10 \\ 0 & 0 & \frac{11}{5} & -4 \\ 0 & 0 & 0 & -\frac{284}{55} \end{bmatrix}$$

3.

$$\begin{pmatrix} 8 & -1 & -16 \\ -14 & 19 & -13 \\ -14 & -1 & 9 \end{pmatrix}$$

4.

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

5.

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

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

$$7. -\frac{7(-35)^n}{9} + \frac{16(-80)^n}{9}$$

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

9. При $\lambda = 1$

10. Определитель: $-144\lambda - 648$, при $\lambda = [-9/2]$ ранг равен 3, иначе 4