

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -2 & 1 & 0 & 0 \\ \frac{9}{2} & -\frac{20}{9} & 1 & 0 \\ 3 & -\frac{5}{6} & -\frac{3}{4} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & -8 & 6 & -9 \\ 0 & -18 & 19 & -20 \\ 0 & 0 & \frac{146}{9} & -\frac{161}{18} \\ 0 & 0 & 0 & -\frac{43}{8} \end{bmatrix}$$

3.

$$\begin{pmatrix} 6 & 16 & 4 \\ 2 & -5 & -6 \\ -7 & 6 & 2 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 2, 3, 4, 5)(6, 9)(7, 8), \text{ord} = 10, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 5 & 1 & 2 & 3 & 9 & 8 & 7 & 6 \end{pmatrix} = (1, 4, 2, 5, 3)(6, 9)(7, 8)$$

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

$$7. \frac{(-5)^n}{7} + \frac{6 \cdot 30^n}{7}$$

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

9. При $\lambda = 4$

10. Определитель: $1561 - 147\lambda$, при $\lambda = [223/21]$ ранг равен 3, иначе 4