

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{5} & 1 & 0 & 0 \\ -2 & \frac{13}{10} & 1 & 0 \\ -\frac{8}{5} & \frac{1}{5} & -1 & 1 \end{bmatrix}, U = \begin{bmatrix} 5 & 5 & 2 & 2 \\ 0 & 10 & -\frac{26}{5} & -\frac{16}{5} \\ 0 & 0 & \frac{94}{25} & \frac{429}{25} \\ 0 & 0 & 0 & 22 \end{bmatrix}$$

3.

$$\begin{pmatrix} -6 & 8 & -20 \\ 7 & -5 & -20 \\ 13 & 14 & 5 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 5, 4, 6, 8, 9)(2, 7), \text{ord} = 14, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 7 & 9 & 3 & 1 & 5 & 2 & 4 & 6 \end{pmatrix} = (1, 8, 4, 3, 9, 6, 5)(2, 7)$$

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

$$7. \frac{5 \cdot 10^n}{3} - \frac{2 \cdot 4^n}{3}$$

$$8. 2 + 0 \cdot x + 2 \cdot x^2 + 4 \cdot x^3 + 4 \cdot x^4$$

9. При $\lambda = -2$

10. Определитель: $42\lambda + 84$, при $\lambda = [-2]$ ранг равен 3, иначе 4