

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{2}{5} & 1 & 0 & 0 \\ 0 & -1 & 1 & 0 \\ \frac{3}{5} & -\frac{2}{3} & \frac{67}{24} & 1 \end{bmatrix}, U = \begin{bmatrix} 5 & 5 & 2 & 9 \\ 0 & -9 & \frac{16}{5} & -\frac{23}{5} \\ 0 & 0 & \frac{16}{5} & -\frac{33}{5} \\ 0 & 0 & 0 & \frac{383}{24} \end{bmatrix}$$

3.

$$\begin{pmatrix} -17 & -14 & -11 \\ 11 & 5 & 17 \\ -5 & 11 & 0 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3)(2, 5, 7, 4, 6, 9, 8), \text{ord} = 14, \sigma^{-811} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 5 & 1 & 6 & 7 & 9 & 4 & 2 & 8 \end{pmatrix} = (1, 3)(2, 5, 7, 4, 6, 9, 8)$$

6. Id; (2, 5, 7, 6); (2, 6, 7, 5); (2, 7) (5, 6);

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

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

$$7. \frac{2(-20)^n}{5} + \frac{3 \cdot 30^n}{5}$$

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

9. При $\lambda = 0$

10. Определитель: $395 - 8\lambda$, при $\lambda = [395/8]$ ранг равен 3, иначе 4