

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 3 & 1 & 0 & 0 \\ \frac{5}{3} & -\frac{11}{12} & 1 & 0 \\ -3 & \frac{3}{2} & -\frac{330}{29} & 1 \end{bmatrix}, U = \begin{bmatrix} -3 & -1 & -3 & -2 \\ 0 & -4 & 7 & 14 \\ 0 & 0 & \frac{29}{12} & \frac{133}{6} \\ 0 & 0 & 0 & \frac{6300}{29} \end{bmatrix}$$

3.

$$\begin{pmatrix} -5 & -16 & 2 \\ 1 & -20 & 1 \\ 9 & -4 & -8 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 6, 9, 3, 2)(5, 7, 8), \text{ord} = 6, \sigma^{-773} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 1 & 2 & 6 & 7 & 9 & 8 & 5 & 3 \end{pmatrix} = (1, 4, 6, 9, 3, 2)(5, 7, 8)$$

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

$$7. -\frac{4(-8)^n}{41} + \frac{45(-90)^n}{41}$$

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

9. При $\lambda = 7$

10. Определитель: $26\lambda + 143$, при $\lambda = [-11/2]$ ранг равен 3, иначе 4