

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -5 & 1 & 0 & 0 \\ -10 & \frac{3}{2} & 1 & 0 \\ -9 & \frac{5}{3} & -\frac{25}{6} & 1 \end{bmatrix}, U = \begin{bmatrix} 1 & 4 & -1 & -3 \\ 0 & 24 & -8 & -14 \\ 0 & 0 & -2 & 0 \\ 0 & 0 & 0 & -\frac{14}{3} \end{bmatrix}$$

3.

$$\begin{pmatrix} 7 & -9 & -20 \\ 3 & -18 & -12 \\ 2 & -11 & -4 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 6, 2)(4, 8, 7, 9, 5), \text{ord} = 20, \sigma^{-773} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 6 & 1 & 7 & 8 & 3 & 5 & 9 & 4 \end{pmatrix} = (1, 2, 6, 3)(4, 7, 5, 8, 9)$$

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

$$7. -\frac{(-2)^n}{19} + \frac{20(-40)^n}{19}$$

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

9. При $\lambda = 3$

10. Определитель: $559 - 113\lambda$, при $\lambda = [559/113]$ ранг равен 3, иначе 4