

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{6} & 1 & 0 & 0 \\ \frac{5}{6} & \frac{16}{5} & 1 & 0 \\ \frac{1}{3} & -\frac{14}{5} & -\frac{78}{97} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -10 & 6 & -2 \\ 0 & \frac{5}{3} & -7 & -\frac{17}{3} \\ 0 & 0 & \frac{97}{5} & \frac{49}{5} \\ 0 & 0 & 0 & \frac{163}{97} \end{bmatrix}$$

3.

$$\begin{pmatrix} 12 & -9 & -5 \\ -7 & -14 & -8 \\ 4 & -11 & -3 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8, 4, 7, 9)(2, 6, 3, 5), \text{ord} = 20, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 6 & 5 & 1 & 2 & 3 & 8 & 9 & 4 \end{pmatrix} = (1, 7, 8, 9, 4)(2, 6, 3, 5)$$

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

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

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

$$7. \frac{6(-18)^n}{13} + \frac{7 \cdot 21^n}{13}$$

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

9. При $\lambda = 5$

10. Определитель: $330 - 8\lambda$, при $\lambda = [165/4]$ ранг равен 3, иначе 4