

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{3} & 1 & 0 & 0 \\ \frac{4}{3} & -20 & 1 & 0 \\ 3 & -24 & \frac{34}{29} & 1 \end{bmatrix}, U = \begin{bmatrix} -3 & 9 & 8 & 5 \\ 0 & 1 & \frac{7}{3} & \frac{7}{3} \\ 0 & 0 & 29 & 49 \\ 0 & 0 & 0 & -\frac{651}{29} \end{bmatrix}$$

3.

$$\begin{pmatrix} 13 & -5 & -4 \\ -14 & 16 & 0 \\ 10 & 17 & 7 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 4, 7, 2)(3, 8)(6, 9), \text{ord} = 10, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 4 & 8 & 1 & 2 & 9 & 5 & 3 & 6 \end{pmatrix} = (1, 7, 5, 2, 4)(3, 8)(6, 9)$$

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

$$7. \frac{14(-70)^n}{15} + \frac{5^n}{15}$$

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

9. При $\lambda = 1$

10. Определитель: $149 - 79\lambda$, при $\lambda = [149/79]$ ранг равен 3, иначе 4