

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{2} & 1 & 0 & 0 \\ -\frac{9}{2} & \frac{18}{7} & 1 & 0 \\ 2 & \frac{2}{7} & -\frac{156}{731} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 2 & -7 & -7 \\ 0 & 7 & \frac{13}{2} & -\frac{7}{2} \\ 0 & 0 & -\frac{731}{14} & -\frac{43}{2} \\ 0 & 0 & 0 & \frac{143}{17} \end{bmatrix}$$

3.

$$\begin{pmatrix} -18 & 9 & -20 \\ 10 & 18 & -10 \\ 15 & -18 & -1 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8, 4, 5, 2, 9)(3, 7, 6), \text{ord} = 6, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 5 & 6 & 8 & 4 & 7 & 3 & 1 & 2 \end{pmatrix} = (1, 9, 2, 5, 4, 8)(3, 6, 7)$$

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

$$7. \frac{(-2)^n}{7} + \frac{6 \cdot 12^n}{7}$$

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

9. При $\lambda = 8$

10. Определитель: $-8\lambda - 16$, при $\lambda = [-2]$ ранг равен 3, иначе 4