

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{7}{3} & 1 & 0 & 0 \\ \frac{1}{3} & -\frac{1}{11} & 1 & 0 \\ -2 & \frac{9}{22} & -\frac{227}{26} & 1 \end{bmatrix}, U = \begin{bmatrix} -3 & 1 & -5 & -4 \\ 0 & -\frac{22}{3} & \frac{56}{3} & \frac{7}{3} \\ 0 & 0 & \frac{26}{11} & \frac{39}{11} \\ 0 & 0 & 0 & 15 \end{bmatrix}$$

3.

$$\begin{pmatrix} 2 & -14 & 9 \\ -9 & 19 & -16 \\ 6 & 18 & 11 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 3, 5, 4, 7, 8)(2, 9), \text{ord} = 14, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 9 & 5 & 7 & 4 & 3 & 8 & 1 & 2 \end{pmatrix} = (1, 6, 3, 5, 4, 7, 8)(2, 9)$$

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

$$7. \frac{4(-4)^n}{39} + \frac{35 \cdot 35^n}{39}$$

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

9. При $\lambda = 4$

10. Определитель: $-80\lambda - 238$, при $\lambda = [-119/40]$ ранг равен 3, иначе 4