

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{9}{7} & 1 & 0 & 0 \\ \frac{4}{7} & \frac{1}{3} & 1 & 0 \\ 1 & \frac{7}{18} & \frac{41}{9} & 1 \end{bmatrix}, U = \begin{bmatrix} 7 & -1 & 3 & -1 \\ 0 & \frac{54}{7} & \frac{48}{7} & -\frac{2}{7} \\ 0 & 0 & -3 & -\frac{4}{3} \\ 0 & 0 & 0 & \frac{113}{27} \end{bmatrix}$$

3.

$$\begin{pmatrix} 1 & -6 & -1 \\ -4 & 12 & -17 \\ -10 & -17 & 16 \end{pmatrix}$$

4.

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

5.

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

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

7. $\frac{14 \cdot 28^n}{11} - \frac{3 \cdot 6^n}{11}$

8. $0 + -4 * x + -2 * x^2 + 4 * x^3 + 1 * x^4$

9. При $\lambda = -2$

10. Определитель: $58\lambda - 416$, при $\lambda = [208/29]$ ранг равен 3, иначе 4