

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{8}{9} & 1 & 0 & 0 \\ \frac{8}{9} & -\frac{103}{14} & 1 & 0 \\ -\frac{1}{9} & \frac{25}{7} & -\frac{584}{1219} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & -5 & 2 & -2 \\ 0 & -\frac{14}{9} & -\frac{97}{9} & \frac{79}{9} \\ 0 & 0 & -\frac{1219}{14} & \frac{971}{14} \\ 0 & 0 & 0 & -\frac{10171}{1219} \end{bmatrix}$$

3.

$$\begin{pmatrix} -12 & 0 & -1 \\ -2 & 0 & 18 \\ 4 & 16 & -12 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 4, 9, 8, 2)(5, 7, 6), \text{ord} = 6, \sigma^{-827} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 1 & 4 & 9 & 7 & 5 & 6 & 2 & 8 \end{pmatrix} = (1, 3, 4, 9, 8, 2)(5, 7, 6)$$

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

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

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

$$7. -\frac{4(-40)^n}{5} + \frac{9(-90)^n}{5}$$

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

9. При $\lambda = 8$

10. Определитель: $-103\lambda - 200$, при $\lambda = [-200/103]$ ранг равен 3, иначе 4