

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{9} & 1 & 0 & 0 \\ \frac{2}{3} & -\frac{12}{31} & 1 & 0 \\ \frac{8}{9} & \frac{119}{31} & \frac{514}{37} & 1 \end{bmatrix}, U = \begin{bmatrix} 9 & -7 & -6 & -3 \\ 0 & \frac{31}{9} & -\frac{28}{3} & \frac{4}{3} \\ 0 & 0 & \frac{74}{31} & \frac{78}{31} \\ 0 & 0 & 0 & -\frac{1717}{37} \end{bmatrix}$$

3.

$$\begin{pmatrix} 8 & 1 & 12 \\ -11 & 4 & 4 \\ -2 & 17 & -7 \end{pmatrix}$$

4.

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

5.

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

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

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

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

7. брак

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

9. При $\lambda = 0$

10. Определитель: $8 - 26\lambda$, при $\lambda = [4/13]$ ранг равен 3, иначе 4