

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{9} & 1 & 0 & 0 \\ 1 & -\frac{108}{65} & 1 & 0 \\ \frac{4}{9} & \frac{17}{65} & \frac{586}{571} & 1 \end{bmatrix}, U = \begin{bmatrix} 9 & 7 & 6 & -4 \\ 0 & \frac{65}{9} & \frac{4}{3} & \frac{22}{9} \\ 0 & 0 & -\frac{571}{65} & \frac{1044}{65} \\ 0 & 0 & 0 & -\frac{5907}{571} \end{bmatrix}$$

3.

$$\begin{pmatrix} -10 & -14 & -13 \\ 10 & -3 & -17 \\ -12 & -10 & 5 \end{pmatrix}$$

4.

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

5.

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

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

7. брак

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

9. При $\lambda = 0$

10. Определитель: $-92\lambda - 496$, при $\lambda = [-124/23]$ ранг равен 3, иначе 4