

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{7} & 1 & 0 & 0 \\ \frac{1}{7} & -\frac{9}{8} & 1 & 0 \\ \frac{3}{7} & \frac{5}{8} & -\frac{5}{4} & 1 \end{bmatrix}, U = \begin{bmatrix} 7 & 0 & 7 & -8 \\ 0 & 8 & 0 & -\frac{1}{7} \\ 0 & 0 & 8 & -\frac{505}{56} \\ 0 & 0 & 0 & -\frac{617}{224} \end{bmatrix}$$

3.

$$\begin{pmatrix} 7 & 4 & 12 \\ 2 & -8 & 11 \\ 8 & -15 & 17 \end{pmatrix}$$

4.

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

5.

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

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

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

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

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

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

7. брак

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

9. При $\lambda = 9$

10. Определитель: $14\lambda + 562$, при $\lambda = [-281/7]$ ранг равен 3, иначе 4