

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{4}{3} & 1 & 0 & 0 \\ \frac{4}{3} & -\frac{23}{17} & 1 & 0 \\ 1 & -\frac{30}{17} & \frac{29}{84} & 1 \end{bmatrix}, U = \begin{bmatrix} 3 & 8 & 1 & 0 \\ 0 & \frac{17}{3} & -\frac{8}{3} & 8 \\ 0 & 0 & -\frac{84}{17} & \frac{48}{17} \\ 0 & 0 & 0 & \frac{134}{7} \end{bmatrix}$$

3.

$$\begin{pmatrix} -4 & -1 & 16 \\ -3 & -1 & -5 \\ -9 & -9 & 3 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3)(2, 9, 4, 5, 6, 7, 8), \text{ord} = 14, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 5 & 1 & 7 & 8 & 2 & 9 & 4 & 6 \end{pmatrix} = (1, 3)(2, 5, 8, 4, 7, 9, 6)$$

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

7. брак

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

9. При $\lambda = -6$

10. Определитель: $-15\lambda - 240$, при $\lambda = [-16]$ ранг равен 3, иначе 4