

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ -1 & 0 & 1 & 0 \\ \frac{4}{5} & \frac{1}{10} & -\frac{123}{20} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & -3 & -4 & -10 \\ 0 & -6 & -1 & 16 \\ 0 & 0 & -2 & -8 \\ 0 & 0 & 0 & -\frac{204}{5} \end{bmatrix}$$

3.

$$\begin{pmatrix} -16 & 19 & -10 \\ -10 & -2 & -7 \\ -15 & -17 & 13 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 7, 9, 5)(2, 3, 8, 6), \text{ord} = 20, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 5 & 6 & 2 & 1 & 9 & 8 & 4 & 3 & 7 \end{pmatrix} = (1, 5, 9, 7, 4)(2, 6, 8, 3)$$

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

7. брак

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

9. При $\lambda = -5$

10. Определитель: $13\lambda - 35$, при $\lambda = [35/13]$ ранг равен 3, иначе 4