

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 5 & 1 & 0 & 0 \\ \frac{7}{2} & \frac{20}{33} & 1 & 0 \\ -4 & -\frac{13}{11} & \frac{210}{37} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & -8 & 4 & -9 \\ 0 & 33 & -13 & 40 \\ 0 & 0 & -\frac{37}{33} & \frac{611}{33} \\ 0 & 0 & 0 & -\frac{1490}{37} \end{bmatrix}$$

3.

$$\begin{pmatrix} 9 & -9 & 11 \\ 1 & 12 & 13 \\ 2 & 8 & -2 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 7, 9, 4)(2, 3, 8, 5), \text{ord} = 20, \sigma^{-811} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 3 & 8 & 9 & 2 & 1 & 6 & 5 & 7 \end{pmatrix} = (1, 4, 9, 7, 6)(2, 3, 8, 5)$$

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

7. брак

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

9. При  $\lambda = 7$

10. Определитель:  $66 - 9\lambda$ , при  $\lambda = [22/3]$  ранг равен 3, иначе 4