

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{7}{6} & 1 & 0 & 0 \\ -\frac{1}{3} & \frac{22}{17} & 1 & 0 \\ \frac{1}{3} & -\frac{18}{17} & -\frac{590}{213} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -9 & -5 & 4 \\ 0 & -\frac{17}{2} & -\frac{41}{6} & -\frac{16}{3} \\ 0 & 0 & \frac{71}{17} & \frac{276}{17} \\ 0 & 0 & 0 & \frac{5962}{213} \end{bmatrix}$$

3.

$$\begin{pmatrix} 2 & 0 & -7 \\ 5 & 14 & 16 \\ -1 & 8 & 6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 9, 8, 7, 4, 2)(3, 6), \text{ord} = 14, \sigma^{-827} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 4 & 6 & 7 & 1 & 3 & 8 & 9 & 5 \end{pmatrix} = (1, 2, 4, 7, 8, 9, 5)(3, 6)$$

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

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

9. При  $\lambda = 1$

10. Определитель:  $304 - 20\lambda$ , при  $\lambda = [76/5]$  ранг равен 3, иначе 4