

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{3} & 1 & 0 & 0 \\ \frac{4}{9} & \frac{73}{39} & 1 & 0 \\ \frac{4}{9} & \frac{100}{39} & \frac{59}{103} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & 7 & -2 & 7 \\ 0 & -\frac{13}{3} & \frac{14}{3} & -\frac{16}{3} \\ 0 & 0 & -\frac{206}{13} & \frac{541}{39} \\ 0 & 0 & 0 & -\frac{1972}{309} \end{bmatrix}$$

3.

$$\begin{pmatrix} 17 & -5 & 16 \\ 12 & -2 & -17 \\ -6 & -4 & 4 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8, 6, 3, 5, 2, 7)(4, 9), \text{ord} = 14, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 7 & 5 & 9 & 2 & 3 & 1 & 6 & 4 \end{pmatrix} = (1, 8, 6, 3, 5, 2, 7)(4, 9)$$

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

$$7. \frac{18(-18)^n}{25} + \frac{7 \cdot 7^n}{25}$$

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

9. При  $\lambda = 8$

10. Определитель:  $-12\lambda - 88$ , при  $\lambda = [-22/3]$  ранг равен 3, иначе 4