1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{4}{3} & 1 & 0 & 0 \\ \frac{1}{3} & -\frac{4}{7} & 1 & 0 \\ \frac{1}{6} & \frac{4}{7} & -\frac{43}{15} & 1 \end{bmatrix}, U = \begin{bmatrix} -6 & 8 & -6 & -2 \\ 0 & \frac{14}{3} & -5 & -\frac{35}{3} \\ 0 & 0 & \frac{15}{7} & -2 \\ 0 & 0 & 0 & \frac{19}{15} \end{bmatrix}$

3.

$$\begin{pmatrix} 13 & -13 & -15 \\ 6 & -15 & -1 \\ -17 & 3 & -18 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,6,9)(2,8,3,5)(4,7), ord = 12, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 5 & 8 & 7 & 3 & 9 & 4 & 2 & 1 \end{pmatrix} = (1,6,9)(2,5,3,8)(4,7)$$

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

7. $-2 \cdot 4^n + 3 \cdot 6^n$

8. $-2 + 1 * x + 0 * x^2 + -3 * x^3 + 4 * x^4$

9. При $\lambda = 8$

10. Определитель: $213 - 96\lambda$, при $\lambda = [71/32]$ ранг равен 3, иначе 4