1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{9}{7} & 1 & 0 & 0 \\ \frac{9}{7} & -\frac{44}{19} & 1 & 0 \\ \frac{3}{7} & -\frac{3}{19} & \frac{122}{415} & 1 \end{bmatrix}, U = \begin{bmatrix} -7 & 2 & 9 & -3 \\ 0 & \frac{38}{7} & -\frac{25}{7} & -\frac{15}{7} \\ 0 & 0 & -\frac{415}{19} & \frac{36}{19} \\ 0 & 0 & 0 & \frac{992}{415} \end{bmatrix}$

3.

$$\begin{pmatrix} -3 & -16 & -19 \\ 6 & -19 & 19 \\ 12 & 5 & -2 \end{pmatrix}$$

4.

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

5.

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

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

7. $\frac{3(-30)^n}{5} + \frac{2 \cdot 20^n}{5}$

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

9. При $\lambda = -4$

10. Определитель: $38\lambda + 393$, при $\lambda = [-393/38]$ ранг равен 3, иначе 4