1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{9}{4} & 1 & 0 & 0 \\ 1 & -\frac{20}{3} & 1 & 0 \\ -\frac{1}{2} & -\frac{14}{3} & \frac{152}{167} & 1 \end{bmatrix}, U = \begin{bmatrix} 4 & 3 & -2 & 1 \\ 0 & \frac{3}{4} & -\frac{17}{2} & -\frac{23}{4} \\ 0 & 0 & -\frac{167}{3} & -\frac{103}{3} \\ 0 & 0 & 0 & \frac{320}{167} \end{bmatrix}$

3.

$$\begin{pmatrix} -8 & 14 & 10 \\ -20 & 19 & -3 \\ 18 & -7 & -3 \end{pmatrix}$$

4.

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

5.

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

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

7. $\frac{5(-20)^n}{23} + \frac{18 \cdot 72^n}{23}$

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

9. При $\lambda = 6$

10. Определитель: $559 - 94\lambda$, при $\lambda = [559/94]$ ранг равен 3, иначе 4