1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{6}{5} & 1 & 0 & 0 \\ -\frac{6}{5} & \frac{2}{7} & 1 & 0 \\ \frac{8}{5} & \frac{22}{21} & \frac{76}{15} & 1 \end{bmatrix}, U = \begin{bmatrix} 5 & -1 & -8 & -8 \\ 0 & -\frac{21}{5} & -\frac{73}{5} & -\frac{93}{5} \\ 0 & 0 & \frac{25}{7} & -\frac{44}{7} \\ 0 & 0 & 0 & \frac{887}{15} \end{bmatrix}$

3.

$$\begin{pmatrix} -19 & -2 & 1 \\ 14 & 18 & 8 \\ -9 & 17 & -14 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,6,7,3,2)(4,8,5,9), ord = 20, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 7 & 6 & 9 & 8 & 2 & 1 & 4 & 5 \end{pmatrix} = (1,3,6,2,7)(4,9,5,8)$$

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

7. $-\frac{2 \cdot 18^n}{3} + \frac{5 \cdot 45^n}{3}$

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

9. При $\lambda = -5$

10. Определитель: $-20\lambda - 40$, при $\lambda = [-2]$ ранг равен 3, иначе 4