1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{8} & 1 & 0 & 0 \\ -1 & -\frac{24}{17} & 1 & 0 \\ \frac{1}{2} & -\frac{10}{17} & -\frac{269}{762} & 1 \end{bmatrix}, U = \begin{bmatrix} 8 & 4 & -6 & -5 \\ 0 & -\frac{17}{2} & -\frac{21}{4} & \frac{37}{8} \\ 0 & 0 & -\frac{381}{17} & \frac{111}{17} \\ 0 & 0 & 0 & -\frac{749}{508} \end{bmatrix}$

3.

$$\begin{pmatrix} 15 & 18 & -6 \\ 9 & -1 & -9 \\ -4 & -2 & -1 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,3,5)(2,9,4,6)(7,8), ord = 12, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 6 & 5 & 9 & 1 & 4 & 8 & 7 & 2 \end{pmatrix} = (1,3,5)(2,6,4,9)(7,8)$$

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

7. $\frac{3(-18)^n}{13} + \frac{10 \cdot 60^n}{13}$

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

9. При $\lambda = 8$

10. Определитель: $468 - 72\lambda$, при $\lambda = [13/2]$ ранг равен 3, иначе 4