

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{9}{5} & 1 & 0 & 0 \\ \frac{2}{5} & -\frac{23}{61} & 1 & 0 \\ -\frac{2}{5} & -\frac{22}{61} & \frac{261}{137} & 1 \end{bmatrix}, U = \begin{bmatrix} 5 & 4 & 9 & -10 \\ 0 & \frac{61}{5} & \frac{31}{5} & -21 \\ 0 & 0 & \frac{411}{61} & -\frac{849}{61} \\ 0 & 0 & 0 & \frac{2732}{137} \end{bmatrix}$$

3.

$$\begin{pmatrix} -8 & -11 & 11 \\ -17 & 7 & 7 \\ 11 & 16 & -18 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 4, 3, 7, 8, 9)(2, 6), \text{ord} = 14, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 6 & 5 & 1 & 9 & 2 & 4 & 3 & 7 \end{pmatrix} = (1, 8, 3, 5, 9, 7, 4)(2, 6)$$

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

$$7. \frac{8(-24)^n}{17} + \frac{9 \cdot 27^n}{17}$$

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

9. При $\lambda = 6$

10. Определитель: $20\lambda - 1026$, при $\lambda = [513/10]$ ранг равен 3, иначе 4