

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 & 0 \\ \frac{3}{10} & -\frac{37}{15} & 1 & 0 \\ \frac{4}{5} & -\frac{112}{15} & \frac{115}{58} & 1 \end{bmatrix}, U = \begin{bmatrix} -10 & -9 & -9 & 6 \\ 0 & -\frac{3}{2} & -\frac{13}{2} & -2 \\ 0 & 0 & -\frac{58}{3} & -\frac{251}{15} \\ 0 & 0 & 0 & \frac{4769}{290} \end{bmatrix}$$

3.

$$\begin{pmatrix} 3 & -14 & -13 \\ -6 & -2 & 15 \\ 8 & 9 & -5 \end{pmatrix}$$

4.

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

5.

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

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

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

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

$$7. -\frac{8(-32)^n}{7} + \frac{15(-60)^n}{7}$$

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

9. При  $\lambda = -3$

10. Определитель:  $288 - 24\lambda$ , при  $\lambda = [12]$  ранг равен 3, иначе 4