

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ -\frac{9}{5} & \frac{41}{10} & 1 & 0 \\ \frac{8}{5} & -\frac{6}{5} & -\frac{11}{153} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & 8 & 3 & -8 \\ 0 & 4 & 10 & 0 \\ 0 & 0 & -\frac{153}{5} & -\frac{117}{5} \\ 0 & 0 & 0 & \frac{308}{17} \end{bmatrix}$$

3.

$$\begin{pmatrix} -20 & 10 & 1 \\ 8 & 6 & -20 \\ -14 & 3 & -18 \end{pmatrix}$$

4.

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

5.

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

$$6. \text{Id}; (1, 2, 3, 4, 7, 5, 6); (1, 3, 7, 6, 2, 4, 5); (1, 4, 6, 3, 5, 2, 7); \\ (1, 5, 4, 2, 6, 7, 3); (1, 6, 5, 7, 4, 3, 2); (1, 7, 2, 5, 3, 6, 4);$$

$$7. -\frac{15 \cdot 30^n}{13} + \frac{28 \cdot 56^n}{13}$$

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

$$9. \text{При } \lambda = -8$$

$$10. \text{Определитель: } 24\lambda - 240, \text{ при } \lambda = [10] \text{ ранг равен } 3, \text{ иначе } 4$$