

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{9}{2} & 1 & 0 & 0 \\ -\frac{9}{2} & \frac{25}{21} & 1 & 0 \\ -\frac{1}{2} & \frac{2}{7} & \frac{81}{334} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & -4 & -6 & 6 \\ 0 & -21 & -31 & 28 \\ 0 & 0 & \frac{334}{21} & -\frac{7}{3} \\ 0 & 0 & 0 & \frac{1525}{334} \end{bmatrix}$$

3.

$$\begin{pmatrix} -13 & -11 & -20 \\ -13 & 12 & -3 \\ -18 & 9 & 6 \end{pmatrix}$$

4.

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

5.

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

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

7. $-2 \cdot 60^n + 3 \cdot 90^n$

8. $1 + 0 \cdot x + -1 \cdot x^2 + 3 \cdot x^3 + 3 \cdot x^4$

9. При $\lambda = 0$

10. Определитель: $244 - 84\lambda$, при $\lambda = [61/21]$ ранг равен 3, иначе 4