

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 3 & 1 & 0 \\ -2 & \frac{8}{3} & -\frac{2}{9} & 1 \end{bmatrix}, U = \begin{bmatrix} 1 & 9 & 8 & -1 \\ 0 & 3 & 6 & -2 \\ 0 & 0 & -18 & 5 \\ 0 & 0 & 0 & \frac{67}{9} \end{bmatrix}$$

3.

$$\begin{pmatrix} -7 & -3 & 2 \\ 12 & 1 & -12 \\ 18 & -11 & 8 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 8, 9, 6)(2, 7, 3, 5), \text{ord} = 20, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 5 & 7 & 1 & 3 & 9 & 2 & 4 & 8 \end{pmatrix} = (1, 6, 9, 8, 4)(2, 5, 3, 7)$$

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

$$7. \frac{5(-20)^n}{6} + \frac{4^n}{6}$$

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

9. При $\lambda = 9$

10. Определитель: $40\lambda - 109$, при $\lambda = [109/40]$ ранг равен 3, иначе 4