

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{2} & 1 & 0 & 0 \\ \frac{2}{3} & \frac{11}{7} & 1 & 0 \\ \frac{1}{3} & -\frac{38}{63} & \frac{37}{396} & 1 \end{bmatrix}, U = \begin{bmatrix} -6 & 5 & 0 & 1 \\ 0 & -\frac{21}{2} & -8 & \frac{13}{2} \\ 0 & 0 & \frac{88}{7} & -\frac{117}{7} \\ 0 & 0 & 0 & -\frac{1921}{396} \end{bmatrix}$$

3.

$$\begin{pmatrix} -16 & -16 & 2 \\ -7 & 13 & -14 \\ 5 & -9 & 5 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9, 4, 5, 7, 8, 6)(2, 3), \text{ord} = 14, \sigma^{-719} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 3 & 2 & 7 & 8 & 9 & 6 & 1 & 5 \end{pmatrix} = (1, 4, 7, 6, 9, 5, 8)(2, 3)$$

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

$$7. \frac{9(-18)^n}{25} + \frac{16 \cdot 32^n}{25}$$

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

9. При $\lambda = 7$

10. Определитель: $58\lambda - 444$, при $\lambda = [222/29]$ ранг равен 3, иначе 4