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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{7}{4} & 1 & 0 & 0 \\ -\frac{1}{4} & \frac{7}{3} & 1 & 0 \\ -\frac{5}{4} & -\frac{55}{9} & -\frac{629}{249} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & -7 & 6 & -9 \\ 0 & \frac{9}{4} & -\frac{25}{2} & \frac{27}{4} \\ 0 & 0 & \frac{83}{3} & -10 \\ 0 & 0 & 0 & \frac{1429}{249} \end{bmatrix}$

3.
$$\begin{pmatrix} 3 & -18 & -14 \\ -5 & -9 & 10 \\ 8 & 6 & -14 \end{pmatrix}$$

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

5.
$$\sigma = (1,3)(2,7,5,4,8,6,9), ord = 14, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 6 & 1 & 7 & 2 & 4 & 9 & 5 & 8 \end{pmatrix} = (1,3)(2,6,4,7,9,8,5)$$

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

7. $\frac{3(-6)^n}{8} + \frac{5 \cdot 10^n}{8}$

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

9. При $\lambda = 2$

10. Определитель: $117\lambda + 237$, при $\lambda = [-79/39]$ ранг равен 3, иначе 4