

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 \\ 2 & 9 & 1 & 0 \\ 9 & -\frac{1}{5} & -\frac{47}{83} & 1 \end{bmatrix}, U = \begin{bmatrix} 9 & -6 & -5 & -8 \\ 0 & \frac{10}{3} & -\frac{26}{9} & -\frac{20}{9} \\ 0 & 0 & \frac{83}{15} & \frac{46}{3} \\ 0 & 0 & 0 & \frac{610}{83} \end{bmatrix}$$

3.

$$\begin{pmatrix} -8 & -7 & -10 \\ 2 & 1 & -1 \\ -17 & -7 & 13 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9, 7)(2, 5, 3, 8, 6, 4), \text{ord} = 6, \sigma^{-733} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 4 & 5 & 6 & 2 & 8 & 9 & 3 & 1 \end{pmatrix} = (1, 7, 9)(2, 4, 6, 8, 3, 5)$$

6. Id; (2, 3, 5, 6); (2, 5) (3, 6); (2, 6, 5, 3);

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

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

$$7. \frac{8(-16)^n}{9} + \frac{2^n}{9}$$

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

9. При $\lambda = 4$

10. Определитель: $99 - 20\lambda$, при $\lambda = [99/20]$ ранг равен 3, иначе 4