Homework 10

Deadline: Tuesday, December 23 at 14:00.

Please submit your solutions either on paper at the beginning of the practicals or as a pdf-file in https://owl.mff.cuni.cz/ . Everything that is not immediately obvious needs to be proved or quoted from lecture notes.
Note that you should solve only one of the following questions below.

1. For the permutations $\alpha = (1\,2\,4)(3\,7\,8)$, $\beta = (1\,3)(5\,6\,8\,7\,2) \in \S_8$ calculate

$$\alpha^8 \circ \beta^{-11}, \quad \alpha \circ \beta \circ \alpha^{-1}, \quad \alpha \circ \beta^{10} \circ \alpha^5.$$

2. Show all matrices $A, B, C \in SL_3(\mathbb{F}_8)$ such that $ord(A) = 2, ord(B) = 3$ and $ord(C) = 7$.
   (The special linear group $SLn(\mathbf{F})$, consisting of all matrices with determinant 1)