Homework 3 / due October 3

1. Determine all groups of order 36.
2. Realize the dihedral group of order $2n$ as a subgroup of a symmetric group.
3. Find all subgroups of the symmetric group $\mathfrak{S}_4$ of order 8.
4. Assume that G is generated by two elements and that $\exp(G) = 3$, i.e., for every $g \in G$, $g^3 = 1$. Show that G is finite.
5. Assume that $2 \nmid n$ and that $n \geq 3$. Show that the permutations (123) and $(123 \dots n)$ generate the alternating group $\mathfrak{A}_n$.