Permutations

Let S be a set. Recall that the set of permutations of S is

$$A(S) = \{f : S \to S \mid f \text{ is bijective}\}$$

and that composition of functions is a binary operation on $A(S)$.

Exercise 1. Show that $A(S)$ with the operation of function composition is a group.

Exercise 2. Fix $a \in S$ and let

$$G = \{f \in A(S) \mid f(a) = a\}.$$

Show that G is a subgroup of $A(S)$, i.e. that G is a permutation group.