

Math 211 - Bonus Exercise 1 (please discuss on Forum)

- 1) Consider the groups $G = \mathbb{R}$ (with operation given by addition) and $G' = \mathbb{R} \setminus \{0\}$ (with operation given by multiplication). Construct actions of both these groups on $\mathbb{R}^2$.
- 2) Show that the group of rotations of an octahedron is isomorphic to S_4 . How does this relate to the last problem on this week's exercise sheet?
- 3) We already saw that the inverse of a homomorphism is a homomorphism. Show that the composition of homomorphisms is also a homomorphism. Can you use this idea to make the set of homomorphisms into a group?