

Homework 3

Due: Friday, 2/20/2004

1. Suppose G_3 is a subgroup of a discrete group of isometries G . Show that if G contains a glide reflection ρ with axis ℓ then it also contains a reflection whose axis is parallel to ℓ .
2. Which ones of the 17 plane crystallographic groups G can be expressed as semidirect product of G_O and T ? Here $G_O = G \cap \mathcal{E}_O$, for some point $O \in \mathbb{R}^2$, and $T = G \cap \mathcal{T}$.
- 3) Using Tietze transformations show that $\Delta(2, 3, 6) \cong G_6^1$
- 4) Is $\Delta(3, 3, 3)$ isomorphic to G_3^1 or G_3^2 .

Extra Credit: Which ones of the plane crystallographic groups are generated by reflections?