Name and Surname:
Student Number:

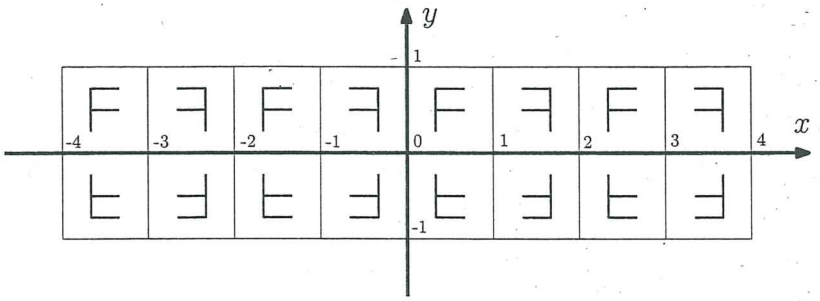
Math 466 - Fall 2019 - METU

Quiz 7

Consider the following isometries. There are eleven of them.

- $\alpha_k(x,y) = (x+k, y)$ for $k = 1, 2, 3, 4$.
- $\beta_k(x,y) = (x+k, -y)$ for $k = 1, 2, 3, 4$.
- $\gamma_1(x,y) = (-x, y), \gamma_2(x,y) = (x, -y)$, and $\gamma_3(x,y) = (-x, -y)$.

For each of the following frieze patterns, let G be the group of isometries fixing that pattern.

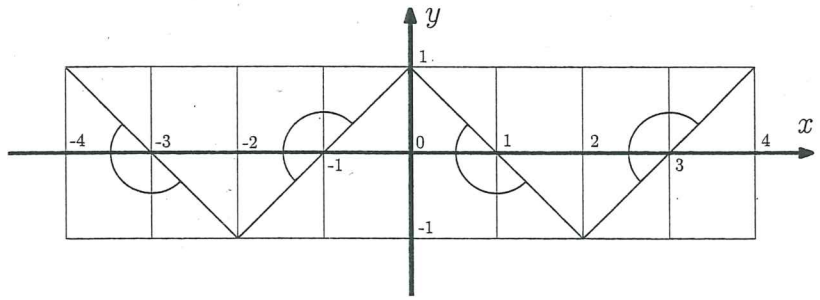


1. Cross out the isometries which are not suitable:

$$\{\cancel{\alpha_1},\ \alpha_2,\ \cancel{\alpha_3},\ \alpha_4,\ \cancel{\beta_1},\ \beta_2,\ \cancel{\beta_3},\ \beta_4,\ \gamma_1,\ \gamma_2,\ \gamma_3\} \subset G.$$

2. Determine the groups H and J. $H = \langle \alpha_2 \rangle$

$J = \{id, \gamma_1, \gamma_2, \gamma_3\}$



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$$\{\cancel{\alpha_1},\ \cancel{\alpha_2},\ \cancel{\alpha_3},\ \alpha_4,\ \cancel{\beta_1},\ \beta_2,\ \cancel{\beta_3},\ \cancel{\beta_4},\ \cancel{\gamma_1},\ \cancel{\gamma_2},\ \cancel{\gamma_3}\} \subset G.$$

2. Determine the groups H and J. $H = \langle \alpha_4 \rangle$

$J = \{id, \gamma_2\}$