MTH101: Symmetry
Tutorial 01

Problem 1. Let l denote a line in the Euclidean plane.

- Describe the group of isometries σ of the plane such that $\sigma(P) = P$ for every point P of l.
- Describe the group of isometries σ of the plane such that $\sigma(P) \in l$ for every point P of l.

Problem 2. We have seen that the composition of two rotations around a point O is again a rotation. Now, suppose σ_1 is a rotation around a point P_1 through θ_1 radians and σ_2 is a rotation around a point P_2 through θ_2 radians. What can you say about the isometry $\sigma_2 \circ \sigma_1$?

Problem 3. Describe the group of isometries of a line.

Problem 4. Construct the complete multiplication table of the dihedral group D_4.