

General Mathematics and ACM II

Exercise 6

February 23, 2011

1. (Ivanov, p. 36, Problem 14.) Show that
 - (a) $R_{\ell_1} R_{\ell_2} = R_{\ell_2} R_{\ell_1}$ if and only if ℓ_1 and ℓ_2 are perpendicular;
 - (b) $R_{\ell} H_A = H_A R_{\ell}$ if and only if $A \in \ell$.
2. (Ivanov, p. 39.) Recall that the symmetry group of a subset A of the plane is defined as

$$\text{Sym}(A) = \{F \text{ motion: } F(A) = A\}.$$

Prove that such a set of motions is indeed a group.