Due Wed, March 2\textsuperscript{nd}. The remarks should not appear on your solutions. They are just comments I thought would be helpful.

Remark: (not part of the statement – this is section 4 #36)

1. Let $G$ be a group and let $a, b \in G$. Show that $(a*b)' = a'^*b'$ if and only if $a*b = b*a$.

Remarks: In problem 2 (not part of the statement), the intersection symbol is being used in the usual set theoretic way. Also, recall the notation $\leq$ denotes “is a subgroup of”. Section 5, # 54.

2. Let $G$ be a group. Show that if $H \leq G$ and $K \leq G$ then $H \cap K \leq G$.

Remark: (not part of the statement), recall what “proper” and “non-trivial” mean. Section 5 # 57.

3. Show that a group with no proper nontrivial subgroups is cyclic.