Geometric Group Theory

Problem Sheet 0

1. Show that a subgroup of index 2 is normal.

2. Let A, B be finite index subgroups of G. Show that $A \cap B$ is a finite index subgroup of G.

3. Let G be a finitely generated group and let H be a subgroup of G of finite index. Show that H is finitely generated.

4. Show that if G is a finitely generated group such that every (non-trivial) element of G has order 2 then G is finite.

5. Let H be a finite index subgroup of G. Show that there is a normal finite index subgroup N of G, such that $N \subset H$.

6. Let G be a finitely generated group. Show that G has finitely many subgroups of index n. (*hint:* use the previous exercise).