Math 250A: Reading and Concepts for Week 2

General reading note: To refresh your comfort with permutation groups and simple groups, it might help also to look over George Bergman's notes on the proof that A_n is simple for $n \geq 5$ (posted on the course website).

The lectures this week will be planned roughly as follows (it may very well take longer to cover than planned):

- Composition series, proving Jordan-Hölder theorem. You should be comfortable with the isomorphism theorems covered last week, and should convince yourself of the following: If G_1, H_1 are normal subgroups of G, then $G_1 H_1$ is a normal subgroup of G. Also, if H is a normal subgroup of G and K is a normal subgroup of G contained in H, then H/K is a normal subgroup of G/K. Finally, the intersection of normal subgroups is normal.

- Abelian, cyclic series, solvable groups. Same suggestions on what you should know and be comfortable with as lecture 4, plus I assume you know what simple, abelian, and cyclic groups are.

- Solvable groups continued. Same suggestions as last time. Review the notion of a commutator subgroup from last time.