

Work the following problems and hand in your solutions. You may work together with other people in the class, but you must each write up your solutions independently. A subset of these will be selected for grading. Write LEGIBLY on the FRONT side of the page only, and STAPLE your pages together.

1. Problem 2.5 #2.

2. Problem 2.5 #12.

3. Problem 2.5 #16.

4. Problem 2.5 #21.

Note: To show that a subgroup H is *not* normal, proceed by contradiction: suppose that it was true that $gHg^{-1} \subseteq H$ for every $g \in G$, and show that this leads to a contradiction.

Hint: The fact that S has more than two elements implies that $H(s)$ contains more than just the identity map (why?).

5. Problem 2.6 #11.

6. Problem 2.6 #12.