

MATH 233, HOMEWORK 2

SETS OF SETS, SET EQUALITY, UNIQUENESS OF ELEMENTS, GROUPS

Due by 10 am, Friday, Feb. 8st

1. HOMEWORK POLICY

You are strongly encouraged to work in groups to exchange ideas and help each other understand how to approach problems, but the work you turn in must be your own! If you work with others on an assignment, be sure to indicate the names of the other students on your homework. Additionally, if you use any outside resources (i.e. internet sources, other mathematicians, other books) to help you solve homework problems, you must cite your sources. Failure to follow these rules will result in a score of zero on an assignment and may constitute a violation of academic integrity.

Homework must be legible, well-organized, and written in complete sentences. Handwritten work is fine, but you are encouraged to type up the problems in LaTeX.

2. READINGS AND RESPONSES.

- (1) Read Sections 1.4, 1.5, 1.6 and 2.1.
- (2) Make up your own example of a set \mathcal{A} whose every element is also a set.
- (3) Whats the basic strategy for showing two sets are equal?
- (4) Why doesnt order matter, when writing the elements of a set?
- (5) Whats the basic strategy for showing some element of a set is the unique element with a certain property?
- (6) What is a group?

3. PROBLEMS

- (1) Problem 11 Section 1.7
- (2) Problem 12 Section 1.7
- (3) Problem 14 Section 1.7
- (4) Problem 19 Section 1.7
- (5) Problem 22 Section 1.7
- (6) Let Z be the set of real numbers which are elements of the intervals $(-3, 2)$, $(-2, 3)$ and $(-1, 1)$. Prove that $Z = (-1, 1)$.
- (7) Write a complete proof of Theorem 2.1.4 to the best of your ability. (At this point in the course, you should not expect to be able to do this very well - the point right now is just to try! You may copy verbatim the parts of the proof given in the textbook and should fill in the rest.