# MATH 233, HOMEWORK 1

SETS, ELEMENTS AND SUBSETS

**Due by 10 am, Friday, Feb. 1st**

## 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 the Introduction and Preface of the course text Number, Space and the Structures of Mathematics. Write a paragraph summarizing the vision of the book. **Write** a paragraph responding to the vision. What aspects do you find compelling? What aspects make you nervous? Is there anything you disagree with?
(2) Read Sections 1.1.1, 1.1.2 and 1.1.3.
(3) In Example 1.2.1, what do you find surprising about how the proof is written? Is it clear or confusing? why?
(4) Whats the main difference between Example 1.2.1 and 1.2.5?
(5) In Example 1.3.5, what is the basic strategy for showing that $A \subset C$? What assumptions are used in the proof?

## 3. Problems

(1) Problem 1 Section 1.7
(2) Problem 2 Section 1.7
(3) Problem 3 Section 1.7
(4) Problem 4 Section 1.7
(5) Problem 5 Section 1.7
(6) Problem 6 Section 1.7
(7) Problem 7 Section 1.7
(8) Problem 8 Section 1.7
(9) Exercise 1.3.10