

You may turn this homework in physically or electronically. To submit it physically, hand in a copy at the start of class before the weekly quiz. To submit electronically, please email a PDF (**not** a Word document!) to the course grader, Yue Zhao, at zhaoy28@uw.edu.

The homework problems are from Sundstrom's *Mathematical Reasoning*, available here:

<https://scholarworks.gvsu.edu/books/9/>

Throughout the course, you should imagine that you are writing your proofs so that they can be understood by someone who is also taking Math 300 at the same time. For the problems from Chapters 3.1 and 3.2, your solutions should be paragraph proofs. For the proofs using the axioms handout, you should write paragraph proofs or two-column proofs.

For this assignment, please solve:

- Chapter 3.1, page 96, problems 2bc and 3ah.
- Chapter 3.2, page 112, problem 5.
- Using the axioms on the [Axioms handout](#) and any theorems proven in class or on previous assignments, prove the following statements:
 1. Let a and b be real numbers. If a and b are negative, then ab is positive.
 2. There does not exist a smallest real number.
 3. Let a and b be integers. If $a > b$, then $a \geq b + 1$.

For extra practice, I recommend completing the progress checks in chapter 3.2. (Don't hand in the progress checks. Just think about the problems on your own. You can look up solutions in the back of the book.)