**Problem set.** The grader and I will select 5 problems to grade. They are worth 2 points each, for a total of 10 points.

**Writing assignment.** Your solution will be graded for mathematical correctness (4 points), clarity and organization (2 points), conciseness (2 points), and appropriate use of English and symbols (2 points), for a total of 10 points. These are explained in detail below, along with some tips for how to get a good score.

- **Mathematical correctness:** 4 points. The solution must provide a correct answer, with proof, and all the important logical steps in the proof must be present and adequately explained.
  - 4 points - The solution is completely correct and solves every part of the question.
  - 3 points - The solution has several minor errors or gaps in the explanation. The core idea of the argument is essentially correct.
  - 2 points - There are one or two major errors that demonstrate an incomplete understanding of how the argument works. However, there is still at least half of a correct argument.
  - 1 point - The solution has several major errors or is missing most of the argument, but there is at least one major step of the argument that is done correctly.
  - 0 points - Every step in the answer has serious logical gaps, or no proof is given at all.

- **Clarity and organization:** 2 points. It must be easy to understand the meaning of each sentence and paragraph, and to locate each step of the argument. Assumptions must be clearly stated. You are encouraged to use “signposts” every paragraph or two to explain which part of the argument will come next.
  - 2 points - The argument is easy to read. In each sentence it is clear what is being argued and how the proof goes. It is easy to locate the various steps.
  - 1 point - The overall structure of the argument is clear, but some of the steps need to be much clearer. It is difficult to locate different parts of the argument, or “hidden assumptions” are used with no explanation.
  - 0 points - A reader would be unable to read and understand most of the argument.
• Conciseness: 2 points. Mathematicians are an impatient bunch; your argument must get to the point. Every sentence should advance your reader’s understanding of the argument in some way. It may provide a necessary ingredient for the proof, proceed with the logic of the argument, or neatly summarize what has been done and what will happen next. Remarks and tangents that are not essential to the proof should be relegated to the end and clearly labelled as “remarks.”
  – 2 points - The argument is concise. Making it any shorter would require cutting sentences that are essential to the argument or to the reader’s understanding of the argument.
  – 1 point - There are unnecessary sentences, variables that are defined and not used again, or long explanations of facts that the target audience (other students in the class) all know quite well. The correct argument may be present but it takes the reader a long time to see it.
  – 0 points - The core argument is impossible to find without a very long reading.

• Use of English and symbols: 2 points. Good mathematical writing is an art form which blends the use of technical symbols with ordinary English. When done well, it is easy for a human to read. This means that the major ideas are explained in complete English sentences, and that symbols are used only to condense complex relationships into a readable format.
  – 2 points - The argument written in complete sentences, with correct spelling, grammar, and punctuation. Symbols are used only in places where they make the argument easier to read.
  – 1 point - There are several spelling, grammar, and/or punctuation mistakes. Symbols are used extensively where English sentences would be more appropriate.
  – 0 points - The English is very hard to read, or the argument is written entirely in symbols with no English at all.

Here are a few examples.

• “This gives the equation $2x = 1.$” is better than either “$2x = 1$” or “This means that when our unknown quantity $x$ is multiplied by two, the result is equal to one.”

• This is a good sentence: “Let $n$ be a positive integer which makes the statement $P(n)$ false.” This is much better than the sentence “Let $n \in \mathbb{N} : \neg P(n).$” Trust me.

• Either one of these is fine: “By the definition of a limit, this implies: $\forall \epsilon > 0, \exists N > 0$ such that $|x_n| < \epsilon$ for all $n \geq N.$” Or, “By the definition of a limit, this implies that for every $\epsilon > 0,$ there is an $N > 0$ such that $|x_n| < \epsilon$ for all $n \geq N.$”