Spring 2018 Math 32404: Advanced Calculus II.

Writing exercise.

Treat your write-up as a rough draft: think about mathematical writing; read through your draft; make comments on it in green, but do not otherwise change it; and then rewrite and improve your solution to one of the problems. Answer (1), (3), (4), and (5) from the following on a separate sheet of paper, titled "Writing Exercise."

1. Read "Some Guidelines for Good Mathematical Writing" by Francis Edward Su, posted on the course webpage.
   List three things you learned or thought about more carefully after reading it.

2. Mark up this written homework assignment, showing where you followed or failed to follow the mathematical writing guidelines below. This means, treat your write-up as a rough draft: read it aloud to yourself to hear how it flows, and then make comments on it in the green reviewing pen, to distinguish the comments from the draft.

Some mathematical writing guidelines:

- Explain your steps using complete sentences and connective words.
- Most statements should logically follow from previous statements, and that logic should be explained. All other statements should be introduced with an explicit purpose: "suppose towards contradiction that..." or "the inductive hypothesis is..." or something like that.
- Balance words and mathematical symbols. Use mathematical symbols for mathematical objects and precise mathematical relations (e.g., points, sets, numbers, functions, operators). Use words to connect these symbols logically and to relate them conceptually.
- All variables that appear in the solution should either come from the problem being solved, or should be clearly introduced somewhere with a "let".
- Punctuate your text with whitespace and paragraph breaks. From time to time, center complicated or important formulas and equations on their own line with space around them, especially if they contain fractions or other vertical constructions. (This is called display setting the expression.)
- If possible, avoid the words "clearly", "obviously", etc. Either it's clear, in which you can just state it, or it's not. These words are often red flags - they indicate that important parts of the problem are being glossed over without understanding.

3. How might you improve in the future?

4. Write a new and better-written solution for one of the problems you edited.

5. (Optional) You may also include new and/or improved solutions to other problems if you wish.

This writing exercise is based on Prof. Z. Daugherty's writing exercises; most of the guidelines in (2) are from Daugherty's Communicating Mathematics through Homework and Exams. These and more are on her webpage at `https://zdaugherty.ccnysites.cuny.edu/teaching/` .