

Math 327 — Spring 2017
WRITING GUIDELINES

- Your solutions/proofs should be neatly hand-written or typed and **stapled**.
- Write proofs using complete sentences and proper spelling, punctuation, and grammar. Write legibly, and leave plenty of space between problems. (For instance, if a problem takes up more than half of a page, you may want to leave the rest of the page blank.)
- Make it clear where each proof starts and ends. (In mathematical literature, it is customary to start a proof with **Proof:** and end it with either **Q.E.D.** or the square \square or the black square \blacksquare .)
- It might be helpful to state from the beginning what you are trying to prove. While this could just be copying the problem statement, it makes the solution easier to read and helps reduce the cases where you get confused and prove the wrong thing.
- Your readers should be able to understand each step you made without struggling. This means that while you may assume that your audience is familiar with the relevant definitions and theorems, you may not assume that they know a solution to the problem at hand or that they've already spent time thinking about this problem.
- Conclude your proof with the statement you were trying to prove.
- Remember that finding a solution and writing up a solution are two completely different things.
- In most cases, your first draft of a solution will not be sufficient. Much like other writing courses, you may need to write a second or third draft to get a proof that is clear, concise, and presentable. Start on scratch paper and leave time to write up a final draft of each problem.
- If you introduce a variable, state clearly what it represents (a real number, an integer, a polynomial, etc.) and any properties you are assuming. For example,
 - Suppose n is an odd integer.
 - Let x_1 and x_2 be natural numbers such that $x_1 < x_2$.
- Use the following terms correctly.
 - The words *thus*, *hence*, *therefore*, *so*, and *then* introduce a logical conclusion. The statement that follows one of these words should be a direct consequence of the preceding line of logic.
 - The words *since* and *because* should precede statements that are assumed or have been proven TRUE.
- If you're typing, use italics for letters used as variables or representing mathematical symbols. For example, this is standard: "Let a be an element of the set E ." "Let a be an element of the set E ," is not as good. (Using italics also helps to distinguish the word "a" from the variable or element " a ".)
- Mathematicians usually write in the present tense and use first-person plural pronouns (*we*, *us*, *our*), as if the person who is writing and the reader are working together. Try to follow this convention. For example, you might write "Next, we square both sides to obtain..." This may seem awkward at first, but you'll get used to it.

Here are some steps that might help you in

Finding a solution

1. Read the problem very carefully.
2. Understand what the problem is asking you to do.
3. Process/understand the information that has been given to you. It may help to draw a picture or to write down all the definitions and their immediate implications.
4. Play with the problem; trying specific values might help some times.
5. Think if the problem you are asked to solve reminds you of any of the problems/theorems you saw before.
6. Determine a plan of attack.
7. Try to implement your plan. Do you see how to start your proof? Do you see how to combine the pieces of information you are given to obtain new information? If needed, try to work backwards. Quite often you'll have to modify your plan of attack or even select a completely different approach. The main thing is not to give up!
8. Once you think you've found a solution/proof, double check it (for instance, have you answered all parts of the question?) and think of ways to simplify it. Do you see a different solution? Does it give the same answer?
9. If you are happy with your solution, start writing it up!