These guidelines are here for two reasons: to make it easier for me to grade your homework, and to help you develop good math writing habits. Ignoring them is very likely to lower your scores.

Collaboration: Talking with others (students, me) about the problems is a great way to learn. But after you've talked about the ideas and *maybe* done an outline or a "know-show" table together, take a break and then write up your answer on your own, in your own words. If you write your answer with someone else's answer in front of you, or very fresh in your mind, you will learn *much less.* Also if I see a very strong resemblance between wording on different papers, I will become grumpy and inquisitive about how much you are working together!

Do not yield to the temptation to look up solutions on the internet. Reading a solution, even if it gives you a strong, happy feeling of "Oh, now I understand this," will not produce nearly as much learning as discussing the problem with other students or the instructor, and then working out your own way of stating the reasoning. Similarly if you get help from a tutor, or even a friend who's taken the course before, stop them if they are telling you what to do, rather than discussing ideas with you and asking questions to lead you to figure things out.

Turn in homework on the due date. You may turn it in at the start or end of class, or to my mailbox in PDL C130 by 3:30. (Turning in to my mailbox later in the day is allowed so that you will not have to skip class because you are printing or otherwise finishing your homework or going home for a forgotten paper.) Hard copy is strongly preferred; emailed scans or pdf files should be used only in case of illness or emergency.

Usually, no late homework will be accepted. Turn in whatever you have done by the deadline. If you don't turn in any homework for the week, a zero goes into your homework average for that week. If you believe this policy is unreasonable for you because of exceptional circumstances (e.g., serious illness, car accident), see me to discuss your situation. Be prepared to offer documentation of the situation.

Format: Homework should be neatly handwritten or typed. Except when only a very short answer is required, your work should be in complete English and mathematical sentences, with punctuation and correct grammar. Problems should be clearly labeled (section or page number and problem number) and in the order assigned. Usually, your first draft is not acceptable; expect to rewrite your solutions before handing them in. You may use both sides of the page if your writing does not show through the page.

Staple all the pages together in the upper left corner of the pages, and be sure this does not hide any of your writing. Be sure your name, "Math 300A", and the due date are on the first page. I strongly prefer that these be written in the upper right corner.

White space: To enhance readability and provide room for grading comments, leave margins of at least one inch of blank space on *all four* edges of each page. (This also provides room for stapling without hiding your work.) Also leave *at least* two lines between problems or parts of a problem. If you are handwriting your homework, for lengthy problems it may be best to start a new page for each problem. (This also makes it easier to put your work in order to hand in, even if you didn't do the problems in the order assigned.)

Short answers, explanations, proof outlines, and proofs: Some problems ask for just a short answer; e.g., "Is this statement true or false?" or "Write the negation of this statement." You aren't required to explain your reasoning unless either the problem says to do so, or I put an "E" by the problem number in the assignment list. An explanation doesn't have to be a proof,

but it should make your reasoning clear. When an explanation is not required, you may still choose to include one, for instance to be considered for partial credit if there might be more than one way to analyze the problem.

If a problem says to "Prove" or "Show" something, or if I put a "P" by the problem number in the assignment, start your answer by stating what you are to prove as a theorem/proposition. (The two terms "theorem" and "proposition" are largely interchangeable, and usually just indicate which results the author thinks are a bit more or less important, respectively. Anything that applies to one also applies to the other.) For example, suppose the problem says, "Show that the product of two odd integers is odd." Your answer would start something like this.

> **Proposition.** If x and y are odd integers, then their product xy is also an odd integer.

Then write a mathematical proof in complete sentences, justifying every step clearly. Clearly indicate the start and end of the proof with "*Proof:*" and "Q.E.D." or the blacksquare ■ "end-of-proof" symbol.

In general the proofs in the book are your models for what a proof should look like. In class we will aim for good proof writing, but because of time may end up with only a first draft. The book introduces many guidelines for proof writing through the first four chapters, and there's a great summary of them in Appendix A.

Early in the quarter, I may mark a few problems "PO+P" for "Proof Outline plus Proof." This means that I want you to give the proof first as a table of statements and reasons, like the "know-show table" the book introduces on p. 18. Continuing the example above, if I marked the problem "Show that the product of two odd integers is odd" with "PO+P", your answer would be first the statement of the theorem, then a table such as the one at the top of page 21, then a proof such as the one starting at the bottom of p. 21. (Numbering the steps in the table is optional, but may be useful if you need to cite something several steps back in a later point in the proof.)

Proofread: Read your work over before handing it in. You'll almost always find at least one oversight (e.g., where you meant to say "not equal" instead of "equal"). If possible, finish your homework early enough so you can set it aside for a few hours or overnight before you proofread.

Miscellaneous tips. (i) If handwriting your homework, be sure to distinguish clearly between upper and lower case letters, and between similar symbols such as a/α, $b/6$, $C/\subset$, $I/\ell/1$, $s/5$, $t/+$, $x/\times$, and $z/2$. (This list is not exhaustive. Again, proofread!) (ii) If typing, be sure to use italics for math symbols. (iii) Separate symbolic phrases, unless they are part of a short list, by some English. (Or in handwritten work, starting a new line may do the trick.) Examples:

> Hard to read: "If we have an odd integer x, $x + 1$ is even."
>
> Better: "If we have an odd integer x, then $x + 1$ is even."
>
> Even better: "If x is an odd integer, then $x + 1$ is even."
>
> List example: "Suppose $x > 0$, $y > 0$, and $x > 0$."