

Handout #4: Homework Expectations

Each week, there will be a written homework assignment to turn in for a grade. The homework problems will mostly be taken from the textbook, with perhaps a few additional ones added in. I will post each new assignment on the class web site, and announce it by sending email to all registered members of the class. Most assignments will be due one week after they are assigned.

These assignments are the heart of the course. Most of them will take some time to think about, so I caution you against putting them off until the evening before they're due. Late homework will not be accepted except in extraordinary circumstances and with advance permission.

I encourage you to work on the homework problems in groups. But when writing up solutions to hand in, *you must write your own solutions in your own words*, unless an assignment is specifically designated as a group writing assignment. If you collaborate on any assignment, you must list the names of any people with whom you collaborated on that assignment.

Mechanics

Here are my expectations regarding the mechanics of writing up homework assignments:

- **Name:** Make sure the first page of each homework packet is clearly labeled with your name, your student number, the course (Math 441), the date, and the assignment number.
- **Staple:** Please staple the pages together.
- **In order:** Arrange your solutions in numerical order, just as they appear on the assignment. Problems that are out of order might not get credit.
- **Legible:** Write your answers neatly and legibly, not too small, with as few erasures or crossouts as possible. Be sure to distinguish clearly between similar symbols, such as $b/6$, C/C , ε/\in , $g/q/9$, h/n , $l/1$, p/ρ , r/γ , U/\cup , $s/5$, $t/+$, $u/v/\nu$, x/\times , $y/4$, $z/2$, and uppercase/lowercase letters. Unless mathematical ideas spring fully and impeccably realized from your pen, your first draft is not acceptable. If you want to think about typesetting your assignments, see below.
- **White space:** Don't be stingy with white space. Leave at least two blank lines between consecutive problems, and leave one-inch margins on all sides of your pages.
- **Identify answers:** For questions that ask for short answers instead of proofs, make sure your answers are clearly identifiable.

Proofs and short answers

For any homework problem that asks you to "prove" or "show" or "justify" something (they all mean the same thing), you'll need to write a complete, rigorous mathematical proof, in complete sentences organized into paragraphs, with due attention to the conventions of mathematical writing that will be explained in the course. At the beginning of each solution, please state clearly what you're going to prove in the form of a theorem (not a verbatim transcription of the problem statement). Show clearly where the theorem statement ends and your proof begins. For example, if the problem says "Prove that $|a|^2 = a^2$ for every real number a ," then your solution might look like this:

Theorem: If a is any real number, then $|a|^2 = a^2$.

Proof: There are two possible cases: either $a \geq 0$ or $a < 0$. If $a \geq 0$, then by definition $|a| = a$, and thus $|a|^2 = a^2$. If $a < 0$, then $|a| = -a$, and so we conclude that $|a|^2 = (-a)^2 = a^2$ by substitution. \square

If a problem just asks for answers to a question and does not ask for a justification or proof, then all you need to do is write the answers to the problems clearly and completely. You don't need to restate the problem, or show your scratch work, or prove your answers correct.

Word processing vs. writing by hand

I welcome computer-typeset submissions from those who are comfortable producing mathematical homework assignments by computer. If you do use a computer, please print out your solutions and turn in paper copies.

Because typesetting formulas by computer takes specialized software and a lot of practice, I don't insist that you use the computer. I'm happy to accept handwritten assignments, as long as they are *neat and legible*, and all mathematical symbols and formulas are clearly decipherable.

If you decide you'd like to learn how to typeset sophisticated mathematics, I'd encourage you to learn about \LaTeX or MathType. There are links to some resources for both on the class website.