

Math 103A: HW instructions

These instructions are extremely important. Your homework will not only be graded on correctness, but also on the format. Please follow all these instructions.

- For all questions, clearly label the question number / part (e.g. 3a) on the left when you start the question.
- Unless otherwise specified, every question requires a complete proof or explanation of your reasoning. Having a short answer without justification will not be awarded full credit. For example in HW 1, all questions except Ch 1.4 Q1,2 require a proof.
- For proof questions: start each problem by “Proposition”, followed by the statement of what you are asked to prove. In the next line, start with “Proof”, then you can start writing your proof. When you are done with your proof, put a square (either filled or blank) at the bottom right corner. As an example:

Proposition. *For all even integer n , the number $3n - 7$ is odd.*

Proof. Let n be an even integer. Then □

- Leave enough white space and margin. Do not crumble everything in a tiny space. It is hard to read that way.
- If you are handwriting, please make sure that upper and lower cases letters are clearly distinguishable. Also distinguish some very similar symbols, for example a/α , $b/6$, C/\subset , $g/q/9$, h/n , $I/\ell/1$, $s/5$, $t/+$, x/\times , $z/2$, etc (this list is NOT exhaustive).
- If you are typesetting, learn \LaTeX and do not use Microsoft Word or its equivalent. The easiest way to use \LaTeX is via Overleaf.com. The end of this handout provides a \LaTeX template. You can copy the code from this link <https://www.overleaf.com/read/fkfpjsntvnrs> on a new Overleaf file.

If you are planning to do research in STEM, I strongly recommend learning \LaTeX now. This makes formatting a lot easier. Even if you are not, I still recommend learning it. It is quite fun to play with.

If you are not using LaTeX for typing, make sure you use italic for math symbols.

- Keep things simple.
- Never use $*$ for multiplication, nor \wedge for exponents; and only use $/$ for fraction when the fraction is simple.

- Do not start a sentence with a mathematical symbol.
- Separate symbolic phrases by some English, unless the symbols are parts of a short list. For example, it can be difficult to understand “If x is an odd integer, $x + 1$ is even”. This is because the second part “ $x + 1$ is even” starts with a symbol x . Write this instead: “If x is an odd integer, **then** $x + 1$ is even”. Example of a short list: “Suppose $x > 0$, $y < 0$ and $z \geq 0$. ”
- Use English and minimize the use of cumbersome notations. It takes time to translate “ $\forall x \in \mathbb{R}, x^2 \geq 0$ ”, while it is a lot easier to read “for all real numbers x , we have that $x^2 \geq 0$ ”.

1 ~~La~~TeX Template

Be sure to delete everything after “begin document” until this line.

2 Ch 1

1. (a)
(b)
(c)
(d)
2. (Try creating your own parts)
- 8.

Proposition.

Proof.

□

(Try creating the rest of the template)

3 Ch 2

(Try creating the rest of the template)