

Introduction: Guidelines for Technical Writing in Math

Good technical writing demands that the author(s) convey information correctly, clearly, completely and concisely. Unlike fiction or poetry, technical writing does not aim to entertain or to invite multiple interpretations. Rather, the discussion should be precise, unambiguous, logical and make a point.

A lab report is a form of professional communication and should be written as such. Below are some tips to assist you. Keep in mind that this is a set of *guidelines*, not a definitive set of rules.

For a fuller discussion of these issues, students may want to refer to http://edisk.fandm.edu/annalisa.cranell/writing_in_math/guide.html

1. Your report should be a self-contained narrative; don't assume the reader has the class hand-out in hand. Begin with an introduction that describes the problem that will be addressed in the report. Then present your results and analysis in a logical order, not necessarily in the order it was assigned in the coursepack or handouts. The questions asked in the coursepack and handouts are a guide to your thinking and learning, not an outline for the report.
2. Rather than merely listing a sequence of equations, incorporate the equations into complete sentences that describe your reasoning. For example, the meaning of

$$\begin{aligned}x &= 0 \\ f'(x) &= 2x = 2 \cdot 0 = 0\end{aligned}$$

is much less clear to the reader than is

By substituting $x = 0$ into the equation

$$f'(x) = 2x$$

we obtain

$$f'(0) = 2 \cdot 0 = 0$$

3. In general, the expressions “one can” (do something), “it can be shown” and similar expressions do not convey the message that “we did” (something). Take responsibility for your thoughts and actions.
4. Use complete and grammatically correct sentences in your report. Each member of your lab group should proofread the report before submitting it. Keep in mind that the computer's spelling and grammar checkers do not catch all such errors. A paper with numerous spelling, punctuation and grammatical errors is much harder to read. Handing in such a paper shows a disregard for the time of the reader and also conveys to the reader that you did not care sufficiently about the assignment.
5. Make sure your pronouns have unambiguous antecedents. If the reader can't identify the antecedent, that may indicate that you don't understand what you are writing about.
6. Avoid using slang and clichés.

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7. Clearly define all variables and include appropriate units.
8. Put titles on your charts and figures.
9. Too much excess verbiage can affect the clarity of and readability of your paper; don't write things just to fill up space. Also avoid empty sentences, that is, sentences that don't tell the reader any useful information. For example, examine the following sentence written by a group of students: "The equation of the exponential function can be calculated best by manipulating the slope and aspects of the linear equation of the semilog plot." The students do not (either before, during or after this sentence) explain how they manipulated the slope, what aspects they are talking about or what they mean by "best". There seems to be no information in this sentence other than that the students seem to be confused.
10. Choose your words carefully, use them correctly and make sure the meaning is clear. For example, in the log plots lab one lab group asserted that they "proved that the set of data is best expressed by a power function." The students had shown that a power function could reasonably fit the data but they did not "prove" anything. Furthermore, they did not make clear what they meant by the word "best".
11. Your opinions about the lab ("The lab was very informational for us.") do not constitute a conclusion. Your report's conclusion should state what were the results of your analysis and what was the implication or significance of those results.

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