

## Some notes on writing in mathematics

1. In mathematical writing, use the standard convention of complete sentences in paragraph form. Include mathematical expressions as parts of the sentence structure. This includes both mathematical expressions within a regular line of text *and* mathematical expressions displayed on a separate line.
2. The choice of whether to write a mathematical expression within a regular line of text or to display it on a separate line is made by considering the complexity of the expression and the importance of the expression. Display complex or important expressions on a separate line; include simple expressions within a regular line of text.
3. The conventional style in mathematics is to write in the first person plural using the present tense. For example, use “We solve the equation to get  $x = 5$ .” rather than “The equation was solved to get  $x = 5$ .” or “I solved the equation and got  $x = 5$ .” In the preferred style, “we” refers to the author and reader together. The present tense is used because the logic and reasoning are unfolding in real time. In contrast, science laboratory reports are often written in past tense because you are reporting on an experiment that has already taken place.
4. A central issue to confront in writing mathematics, and in most technical writing, is that of how much detail to include. Including too much detail (say lots of algebraic and arithmetic steps) obscures the main flow of logic and reasoning. Omitting too much detail forces the reader to work hard to connect steps. Consider omitting routine algebraic manipulations and arithmetic steps.
5. The appropriate level of detail depends on the audience. You should have an audience in mind for any writing you do. For this course, you should write for an audience of peers who have the same mathematical background you have but haven’t thought about the specific problem at hand.
6. Choose notation carefully. Always give a specific meaning for a new symbol before using that symbol. Remember that upper and lower case versions of the same letter are different symbols.
7. Avoid starting sentences with a symbol or number. For example, use “The slope  $m_1$  is the negative reciprocal of  $-4/3$ .” rather than “ $m_1$  is the negative reciprocal of  $-4/3$ .”
8. Use the words “equation” and “solve” only when these are relevant. A mathematical expression is not necessarily an equation; it may be a formula, an identity, or just an expression. Likewise, there are many mathematical actions other than “solving an equation.” For example, one can “simplify an expression,” “substitute on the right side of the equation,” “factor a polynomial,” or “calculate a value.”