Math 2163: Guidelines for written work

Good expository writing knows its audience and gives it neither too much nor too little credit. In your case, write as if your audience consists of classmates (or, perhaps, yourself-from-last-week). The object is not to prove that you're smart, but to help your audience understand the solutions (and their underlying ideas) without first having to suffer through all the same difficulties that you did. Thus, you should not "skip steps" or leave gaps in your reasoning that only a professor could fill easily, but you also shouldn't spend time or energy explaining things that wouldn't cause trouble for an average high-school student. (This leaves a lot of room for error! Finding the right middle path is a difficult art. Be aggressive about soliciting advice from your classmates or from me.)

Other important ideas:

1. Write very neatly or type.

   Your reader has a difficult enough time trying to understand your mathematical ideas. Don't make it harder by forcing them to expend energy deciphering your words, or deciding if that's a z or a 2, an ℓ or a 1, etc.

2. Write things in the order they should be read.

   You want your audience to encounter thoughts, ideas, derivations, graphs, etc., in a certain order. Write from the top of the page to the bottom, putting your ideas in the order that you want them to be read. If you include graphs, tables, or other figures, put them as close as possible to where you talk about them.

3. Write in complete mathematical sentences.

   Ignoring graphs and tables, most mathematical symbols are nouns. The main exception is the symbol "=", which is a verb. (It's pronounced "equals".) Sometimes, your solution should contain only English words, but even when you have symbols or algebraic derivations, you should be able to read it aloud and have it sound like English sentences.

4. Whitespace is an important tool - use it wisely.

   Mathematical sentences should be separated by at least as much space as English sentences. (Likewise, paragraphs.)

   In long algebraic derivations, it can be helpful to stack things vertically so that every term is directly below a related term on the previous line.

   Use indentation to indicate nesting of ideas, and vertical space to indicate the pause for breath between finishing one thought and starting the next.

5. Always begin with a restatement of the problem.

   A restatement need not be a verbatim repetition. Just give enough that the audience will know what you're doing, and what any variables stand for, without having to first dig out some other document and then hunt through it for the right problem number. Many of you have probably already experienced how it's incredibly annoying to have to do that. Don't inflict it on someone else if you can possibly avoid it.

6. End with a clear conclusion.

   After working through a long problem with multiple ideas, the audience can be expected to have forgotten the point (especially if it involves combining the results of multiple paragraphs). Remind them, concisely, what you've concluded, and tie it back to the problem statement if necessary.

7. Clearly define any functions or variables you introduce.