

Essays in Calculus

In this calculus course, you will be assigned a number of expository essays, in which you will be asked to explain or discuss an idea that is central to the theory of calculus. While students are typically apprehensive at first about writing on mathematical topics, past students have frequently found that writing an essay can be an excellent way to explore and learn the ideas presented in the course. By figuring out a way to explain these ideas in your own words, you will come to understand them much more thoroughly than if you simply listen to me explain them to you. In addition, writing essays will provide you with an opportunity to practice writing on a technical subject, something you wouldn't typically get in a humanities course.

Your essays will cover topics that we will be discussing in class, and which you will find described in your textbook. In each essay that you write, imagine that you are the one who has to teach the topic to the class. Suppose that the class has learned the relevant material preceding the essay, but has not yet thought about or read about the question to be addressed. A good way to write an essay is first to try to study lecture notes and the text in order to understand the topic. Then, close your lecture notes and your text, and try to explain the topic in your own words. I can usually tell if you are merely rephrasing the explanation given in the book. You will learn more, and get better grades, by writing as much of the essay as you can with your book closed.

College-wide rules of academic honesty and proper citation apply to your essays. If you use a block quotation or a snippet quotation from your textbook, you must cite this accordingly. (Since you're supposed to be putting these ideas in your own words, quotes should be kept to a minimum.) If you use an outside source, you must also cite this. Each of you should have received the Grinnell College Academic Honesty Handbook in your tutorial; citation procedures can be found there. It is not necessary to cite your own notes taken in lecture, but if you use your textbook or another calculus textbook as a source, you must acknowledge this in a "Works Consulted" section at the end of the essay.

Essays are writing assignments, so they should represent your best formal writing. Do not use sentence fragments or vague explanations. Opinionated comments like "I thought this was cool" or "This seems pretty useless" likewise have no place in your writing. I look for accuracy, precision and clarity in your explanations. I like prose that thoroughly elucidates a topic, but is at the same time straightforward and to the point. If English is not your first language, or if you find that you're having trouble with writing in general, the writing lab is a great resource. There's a link to the writing lab webpage on the course webpage.

Essays must be typed and double-spaced, and must not exceed two pages. If you wish to include mathematical notation or a diagram in your writing, it is acceptable to write the notation or draw the diagram in by hand. Simple equations or expressions like $x = 2$ can be included within the text of your essay, but more complicated mathematical equations or expressions should be placed on a separate line and centered within the text. For example, instead of writing

The derivative of a function $f(x)$ is given by the formula $\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$.

you should write

The derivative of a function $f(x)$ is given by the formula

$$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}.$$

Remember that I'm interested in your writing and explanations. Pictures should not be used as substitutes for explanations.