

Review sheet for Math 211 Quiz #2

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Welcome, Calculus travelers. This is Pebbles and BamBam comin' at ya with some good info regarding the quiz for you, which is this coming Monday, 10/30/06. We both wish you the best of luck. Corey visits our nursery sometimes and talks to the fake potted plants. We overheard him telling the fake flowers about your quiz, and thought we'd pipe up and help you all out by posting this review sheet. ROCK ON!

1. Section 2.1: The derivative and tangent line problem. There is some information on the other exam review sheet that I suggest you look at, I won't repeat it here. The additional information you should really know comes in two parts. First, that you should know how to find the equation of a tangent line. More specifically, I can see Corey giving you a function and a point on the graph, and he'd ask "Please find the equation of the tangent line of the function $f(x)$ at the point $(x, f(x))$ ". See homework problems 25-32 of this section and 53-56 of the next section (2.2). The next is that differentiability implies continuity. In particular, a more accurate description of what Corey seems to want you to know is to be able to identify where a function could fail to be differentiable. Remember, he asked those kinds of problems about continuity and limits on graphs. Just remember that anywhere a graph has a sharp point or a vertical tangent line is where it's not differentiable (these aren't the only features that would designate a failure to be differentiable, but just the most likely ones you'd see). It seems like that would be a good final exam question, but that doesn't mean that for this quiz one could be ignorant of these issues. Knowing that a function isn't always differentiable everywhere is an important basic fact.

2. Section 2.2: Basic differentiation rules and rates of change. It is in this section that our lives become easier. Here is where we learn lots of great rules that tell us how to take derivatives of common functions: polynomials, and the sin and cos function, mainly. I would know how to use these rules (especially the power rule) correctly. Remember, in class Corey showed you all some really common mistakes. For example, people often mistake the power rule and try to use it too often and forget their task is easier: $\frac{d}{dx}\pi^2 \neq 2\pi$, it's 0. Please, for Corey's sake, try not to make these common errors—see the classnotes for more information regarding these. See the homework for good practice and see the class notes for a good explanation of these rules. It's in this section that we discussed the relationship between position, velocity and acceleration (the derivative of the prior is equal to the next). It is these relationships that allow us to predict physical phenomena, and study other applications.
3. Section 2.3: Product and Quotient rules and higher-order derivatives. In this section you learn the product and quotient rules, which, combined with our other rules from the previous section, increase vastly the kinds of functions we can differentiate. For example, we can differentiate all sorts of trig functions, and rational functions (fractions of polynomials) as well.
4. General suggestions: I think, again, that you should study for this quiz. After all, how could that not be a suggestion. I would look carefully at all of the homework we've done and the class notes and practice these processes until you're very proficient at them. The quiz (and the upcoming midterm) won't have many surprises, it will just ask you to demonstrate that proficiency. It's pretty likely that he'll ask you to take a lot of derivatives. Oh, and

ROCK ON!!!!