

Midterm # 2 Review

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May 18, 2007



Hi everyone. This is Franz Kafka, taking a break from whatever it is I do, to tell you about your upcoming exam. Corey really doesn't know anything about who I am, or what I do. In fact, the only thing he knows for sure is that there is a "Home Movies" episode about, in part, Franz Kafka. That is all. ROCK ON!

1. Section 5.6: Inverse trig functions: Differentiation. Similar to section 5.4 when we learned the derivative of an inverse function, in this section we learn the derivatives of other functions that are defined as inverse functions, this time, as inverse functions of trig functions. We'll compute the derivative of arcsin, arccos, and arctan. Remember them. These derivatives will complete our foray back to Math 211, and the differentiation rules that I would want you to know by heart are found nicely displayed in a chart on page 376, just beneath a picture of Galileo. Corey certainly doesn't look like that when he's thinking about math. He looks a little more helpless, but hey, I guess we're all stuck with him. Yes, you need to know what's in this

chart (except entry 8, 11, and 22-24), but please keep in mind that these derivatives weren't just handed down from some divine being and given to us to memorize and try to understand. Those derivatives in the chart are conclusions drawn from basic differentiation techniques. To tell you the truth, all I ever remember is the sum rule (2), the product rule (3), the chain rule, the power rule (6), and the derivatives of e^x , $\sin x$ and $\cos x$. The rest is something I could derive if I had to, and I suggest that you try to adopt this approach. I just remember a few facts and a few methods and that's how I get by. If you must memorize these, then I suggest you do. That knowledge will be very helpful as time goes on.

2. Section 5.7: Inverse Trig functions: Integration. The only thing in this section are the corresponding integral formulae from the derivative formulae we found in the previous section.
3. Section 8.1: Basic integration rules. As Corey discussed in class, all of the sections we have seen have been more or less biasing our integration approach. For instance, in the section entitled "How to integrate e^x " (Section 5.4) it was really easy to know what to look for—the subject matter of the section sort of gave it away. Section 8.1 is around to help us learn how to make these sorts of decisions in the real world. After all, if you're walking down the street or riding your bike and someone comes up to you and asks you to integrate something (this happens to Corey, actually, all the time), then you may not be sure where the stranger got the problem, and so how are you to know how to solve their problem? Section 8.1 is a collection of integrals that are not necessarily from any specific section, and so what is to be learned from this section, and is sort of an inner journey, is how to decide which method of integration to use. As time goes on, we will learn lots of different types of integration techniques, and you will again have to decide for yourself which of those to use when it comes time for, say, an exam. So this section is really great practice, and I encourage you to spend a lot of time on it.
4. General suggestions: I think you should study for this test. Corey really doesn't like surprises, and I think that it's extremely unlikely this test will be anything but straightforward. I can't emphasize enough the importance of practicing. Really, the more you practice, the easier this stuff will become, and the more confidence you will have walking into any quiz or exam. As always, if this review sheet isn't enough, feel free to drop by Corey's office hours (or by appt) and he can help you out. Oh, and

ROCK ON!!!!