

# Math 252 Quiz # 2 and Exam # 2 review sheet of goodness!!!

A Moonanite from Aqua Teen Hunger Force

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*Hi kids! I'm a Moonanite, here to tell you about your upcoming quiz and exam. Corey thought for a long time whether or not it was still a good idea to give you a quiz after all of the wildfire stuff, but has been reminded that it's really the best idea to stick to your syllabus, and since the syllabus advertises a quiz, we should do the quiz. Of course, Corey knows you don't like quizzes, but he reminds you that this quiz will not cover that much material. In fact, the quiz # 2 will be on Thursday November 8th, and will cover only Section 5.5 on Triple integrals. The exam # 2 will be exactly one week later, on November 15th, and will cover Sections 5.5 and 6.1. Below you'll find my impressions on these sections. You will have a substitute on Tuesday November 13th who will answer questions about the upcoming exam, and cover some new material. Then, you will have a substitute proctor who will administer your exam November 15th. Both substitutes will be carefully chosen, and I happen to think you'll get just as many good answers out of them as you would from Corey. Except without the sass. Oh, and ROCK ON!!!*

1. Section 5.5: Triple Integrals. This section really was cool. After all, it was this section where we really began to realize that integration isn't something that must be constricted to one or two variables, but to arbitrarily many variables, each one could be given a specific meaning so that these integrals make sense in their own way. In the case of triple integrals, Corey introduced these as the limit of a certain Riemann sum, and pointed out that Fubini's theorem holds for "nice" functions. When we went

on to defining the triple integral over regions that aren't 3-D rectangles, we used the same approach. What is important is that the regions we wish to integrate over will be describable as elementary regions, and thus the iterated integral is set up as such. Of course, Fubini's theorem holds again for nice functions that we'll encounter and changing the order of integration must be approached with the same care that it was when changing the order of integration of double integrals over more general regions. In particular, you'd need to describe the region differently before you could set up the same integral in a different order. See the class notes and homework for more on this process. In all, there really is nothing so much different in evaluating these integrals, it's just iterating the same process one more time.

2. Section 6.1: The geometry of maps from  $\mathbb{R}^2 \rightarrow \mathbb{R}^2$ . This section is really an introduction to the next section on the change of variables formula. In particular, in the next section we'll learn how to do the analogy to  $u$ -substitution in higher dimensions, so an understanding of all types of nice functions from  $\mathbb{R}^2 \rightarrow \mathbb{R}^2$  will be a good warm up. There are several types of maps that are worth knowing quite well, namely, the map which takes you from polar coordinates to rectangular coordinates, and so-called *linear* maps. Corey will be very specific with what he wants you to know from this section, but mainly a good understanding of these sorts of functions is what is wanted. In addition, are these maps 1-1 or onto?
3. General thoughts. This test will look a lot like the last one, but of course, there will not be as much material to cover. But this doesn't mean that the test will necessarily be shorter, I'm sure Corey will be able to find enough questions to ask you. So I recommend using the quiz as a guide, and making sure to ask Corey the questions you want before he leaves early Saturday, November 10th. Other than that, ROCK ON!!!