**How you should study for a test.**

First of all, you really shouldn’t be studying “for a test”—you should be learning the material. If you know the subject matter, then there is nothing to worry about when you take the tests.

**Work problems.**

The way to learn how to do mathematics is also the way to do well on a math test—do lots of problems. The more problems you do, the easier they become. Also, it is more likely that you will have already done some like the ones you’ll find on a test. Of course some of the problems may not be exactly like the ones you’ve done; however, if you’ve done a variety of problems, you’ll be prepared to tackle slightly different ones.

**Look at quizzes and homework and notes from class.**

If you have some idea about which concepts are more important, then you can see what kinds of problems to work on. A sense of how the topics fit together is part of what you are learning. One way to judge an idea’s importance is seeing how much time we spent on it in class. If we spent a lot of time on a subject, it might be important. (It might just be a problem that took more time than it was worth, so be careful.) Another guide is to see if it appeared on a short quiz, or perhaps as a homework problem.

**Don’t “cram” the night before.**

You need a clear mind, and a good night’s sleep helps a lot. If you stay up late studying the night before a test, you are much more likely to be so tired that you’ve lost your edge when you actually take the test. You might lose a lot of points on the “little” things that you miss when you’re not alert. This is especially important for Extension classes, as most students have already put in a full day’s work before an evening class.

**How you should take a test.**

Suppose you know the material we covered. How can you convince me that you deserve an A grade?

**Look over the whole test.**

Make sure your copy of the test isn’t missing any pages, and that you can read all the printing. Be sure you understand what you are expected to do for each problem.

**Do the problems you are sure of.**

Often you can quickly get through a lot of the test. On many tests, some of the first several problems are pretty short and not too hard. Usually these will be more like the simpler homework and quiz problems. Doing those first gives you a base score, and then you can add to that with some work on the other questions.

**Try some harder ones.**

If there are still some problems left, then you have to choose which ones to try next. Here are a few suggestions:

- Don’t waste all the remaining time on just one question, since you want to have enough time to try every problem that you have a chance of doing.
- On the other hand, these may be hard enough that each will require several minutes of work. Allow enough time for a serious attempt to solve each problem you try.
As you do each problem . . .

You should realize that doing a problem involves much more than merely finding an answer. You also have to show me how you did it and convince me that you understand the concepts that we’ve covered. Normally, you should show all your work. An unsupported answer, even if it is the “correct” one, will usually receive no credit. If there isn’t enough room to write your solution, then make sure that I know where to look for the rest of your work. Write a note, or draw an arrow pointing to the rest of your work. Often you can use the back of an exam page for more space. For example, you might want to do your rough calculations on the back of an exam page, and put your final work in the space on the front of the page. If you do that, remember to show enough work with your answer so I can see how you arrived at that answer. Don’t just write the answer there.

Write neatly and clearly. Poor handwriting and sloppy work can cost you points; neatness alone won’t earn a passing grade, but it helps you get all the credit you deserve for your work. When you work carefully, you are less likely to make other errors in your calculations.

If I can’t understand what you’ve written, I’m not likely to give you much credit for it; if I can figure out what you’re trying to do, I can see how many points you deserve, even if you didn’t complete the problem. You should organize your thoughts and express them clearly, showing details and using standard notation.

Although mathematics is a collection of tools and techniques useful in problem solving, it is more than that. Mathematics is also the language you use to explain what you’ve done, and precisely how you’ve done it. In mathematics, as in other languages, there are standards for acceptable work. I expect you to be aware of the “spelling” and “grammar” rules for this language. (You are expected to have a working knowledge of arithmetic, algebra, and perhaps trigonometry, for instance.)

Simplify each answer. Sometimes the instructions will direct you not to simplify, but normally you should write each answer in the simplest possible form. As a general rule, a “simplified” expression is one expression, in factored form, and without any common factors.

Clearly indicate your final answer for each question. Often there is a space where you can write your answer, or you can circle or underline it. I want to see that you know when you’ve finished each problem.

Before you hand in your paper:

• Check your work carefully. Look for arithmetic and algebra errors. While the test questions are usually designed so that the arithmetic and algebra are pretty easy, sometimes you can make a mistake there, and of course you don’t want to lose any points.
• Make sure you haven’t skipped any problems that you could have done. If there is a problem that you can’t do, then you should leave it blank.
• Re-read each problem, so you can see if you’ve done what you’re supposed to on it. Sometimes people try to do even more work than a problem asks for.

Watch Out For These Errors:

Many times students write one thing when they actually mean something else. Of course, I can’t do your work for you, so you must be very careful about what you write. You should avoid these common errors:

• splicing everything together with “equals” signs. If you write that two expressions are equal, how am I supposed to know that you don’t really mean it? For instance, consider equivalent equations. Although two equations may be equivalent, it doesn’t follow that their parts are all equal. Here is an example of this kind of nonsense:

\[ 4x = 8 \quad \text{“} = \quad x = 2. \]

Do we really mean that \( 8 = 2 \)? (Other examples involve linking functions with their limits, derivatives, or integrals.)

• missing limits and arguments, especially for trig functions: “\( \sin(x) \)’” is a number, but “\( \sin \)” alone isn’t. It is not acceptable, any more than \( \sqrt{ } \) would be OK when you really meant \( \sqrt{x} \), or using \( x^2 \) instead of \( x^2 \). Know the difference between

A function: \( f \), its value (a number): \( f(a) \), and its limit (another number): \( \lim_{x \to a} f(x) \).

• using \( \emptyset \) for 0. Although there is a connection between an empty set and the number zero, they are different. If you mean 0 (zero), then don’t write \( \emptyset \) (empty set) instead.

Remember, I will award credit only for what I can see that you have actually done—not for what I think you might be able to do.