

Calculus Study Techniques for Students

Study Technique 1: After each lecture, read/skim through your lecture notes and then work on the assigned homework. Try to keep up with homework and use the MRTC or TA or instructor for any questions on which you are stuck. **A study technique that is very effective when working through the homework is the following: Do the first two questions assigned; then redo them both, and do the third; then redo those three, and do the fourth; then redo those four and do the fifth, etc.** This study technique allows different, but related, ideas that arise in different questions to connect, and so allows students to see the big picture of what is going on while, simultaneously, learning intricate details.

Study Technique 2: While working through homework, it is very tempting to use a solution manual. Solution manuals can be very helpful and very effective, but only if used correctly. **The correct way to use a solution manual is, if possible, to read the first one or two lines of a solution and then try to continue the problem from there without looking at the manual's solution again.** If that is not possible, then read the solution all the way through, but then close the manual and try to reproduce the solution (or at least the main ideas of the solution) without the aid of the manual.

Study Technique 3: **After you complete your homework, read the section(s) in the textbook that will be covered in the next lecture.** It is likely that you will not understand everything you read; however, reading the sections before lecture will help you understand what is presented in the lecture.

Study Technique 4: Try this technique to help you prepare for a test. A couple/few days before the test, look over all the homework. The day/night before the test, look over the homework again, and ask yourself what the key concepts and methods are per question (WITHOUT reworking the questions). Jot this down on a sheet of paper and when you are done, compare with your solutions to see if you were correct. Any question in which you were on the wrong track, look over your solution to it to make sure you see what the main idea is. **This work the day/night before will help get your brain to think faster and bring the material to the front of your brain to help you think faster during the actual test.**

Study Technique 5: Study with a friend to help you prepare for a multiple choice test as follows: Student A works problem A for the first time and student B works problem B for the first time (not homework problems). After you individually solve your problems, you think of possible mistakes and each of you turns his/her problem into a multiple choice problem. Next, exchange problems so that the other student sees the problem for the first time as a multiple choice problem. **This might help you in several ways: more study time, can be competitive, can see potential mistakes so you won't make them in the future, and helps get you ready for multiple-choice type questions.**

Study Technique 6: Another recommendation for preparing for a test is to go over a practice test (or a former test, or a test you have written using questions selected from the homework) and **simulate a test atmosphere (no lecture notes, no phone calls, no TV, no radio, etc) while working the test.** If you run out of time, draw a line across at the "time up" mark, and continue to work the test, and write down how much extra time was needed to finish the test. This will give you an idea of how fast you will need to work in order to finish the real test. Ideally, you will have time to enact such a simulation a few times with different practice tests, and so get adjusted to the test atmosphere.

Study Technique 7: If you have already done tests in the class, and if you have solutions to those tests, then two days or more before the test, **look over those previous tests and their solutions, and a day later, without relooking at those tests, try to rework them in a timed environment, simulating the atmosphere of the test, and see if you can do them each in the time allowed.** Then compare your solutions with those from the tests.

Study Technique 8: Think back to past tests on which you have done well in the past few years. Were there common things you did for those tests that you can repeat now? Did you get lots of sleep the night before, or just a few hours? Did you study during the few hours prior to the test, or relax in that time? Different things work for different people, so you need to figure out what will help *you* do your best. (E.g., contrary to respected scientific theory, some people do better on tests if they only get at *most* 3 hours sleep the night before a test!) **Do not listen to peer pressure, but think back on *your* past tests on which *you* did well in the last few years and ask yourself what was common to those situations to find out what will/might work for you now.** If you can find study techniques that work well for you in this class, then those techniques are likely to work well for you in many of your classes.

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