Mr. Korpi's Guide to Surviving AP Calculus AB & BC
(and—shh!—maybe even enjoying it)

For most of you, AP Calculus will be the hardest math class you will take at NBHS: by preparing you to do high-level mathematics, and previewing calculus concepts, a year in Calculus makes college (and life) much easier than it would be otherwise. But you don't have to be a math superstar—or insanely hard-working—to do well: most of last year's A's were earned by students who studied efficiently, not just intensely.

Three main tips that echo throughout:

- Plan ahead. Doing work at the last minute hurts your understanding, and leaves you less ready for tests, quizzes, etc.
- Memorize important formulas, theorems, and concepts. Review them often.
- Get the ones you know right, quickly, first. Whether on homework, quizzes, or tests, work as efficiently as possible on the problems that seem most tractable, then go back and think through harder problems.
- Use available help. Don't think that doing it well requires toughing out every single thing on your own.

Homework

Doing homework regularly, well, and efficiently is the **key** to your success. None of you dislikes homework more than I did in high school; I *only* assign homework I think is important or meaningful. Put differently: 100% of the problems I assign are genuinely worth doing.

- Start your homework early, when you're not tired yet, when classwork is still fresh, and when you can identify what problems require without rushing. Doing homework the night it is assigned is a must! This reinforces the concepts and also gives you an extra day to get help if you need it. Oh, you'll discover it also alleviates stress.
- "Hit and run": first identify the problems you can do easily (and get them done), then go back and work on harder ones. Don't spend more than a few minutes staring at a problem without doing anything: if you run out of things you can do to attack it, leave it and get help later.
- Get help: from friends, from the internet, from math tutoring, from the "magic book" of homework solutions (not just answers) available in Mr. Korpi's room, or from Mr. Korpi's website. Be sure that after getting help, you revisit that problem or concept. Remember, ultimately, you are responsible for demonstrating the mastery on your own in a timed environment. It's OK to work the same problem more than once, twice, thrice, etc.

For a homework assignment due on Wednesday, I'd be inclined to start with about ½ hour on Monday night (a) quickly reading through the problems and identifying potential trouble spots, (b) doing some easy ones, and then (c) attempting a few harder problems. Then I'd email out or talk on Tuesday about some of the harder ones. That would leave Tuesday night or early Wednesday to make a real stab at the harder problems. You can also use some of that time to finish the easy problems as "extra practice".

Notes

Notes are a useful reference if you make them so. Keep them organized. Each night, spend a few minutes (not more than that!) going over your notes and summarizing the most important ideas or skills from that day's work. Finally, keep a list of important theorems and identities on a separate sheet in your notebook. You'd be surprised how many students never revisit their notes! You should also get in the habit of reading your textbook. There is a lot of information and explanations in it that are not included or different from my lectures, and for which you are still responsible. To even further help you to be successful, try reading the section BEFORE the lecture. You'll come to class with primed and will absorb the new information more quickly.

Quizzes

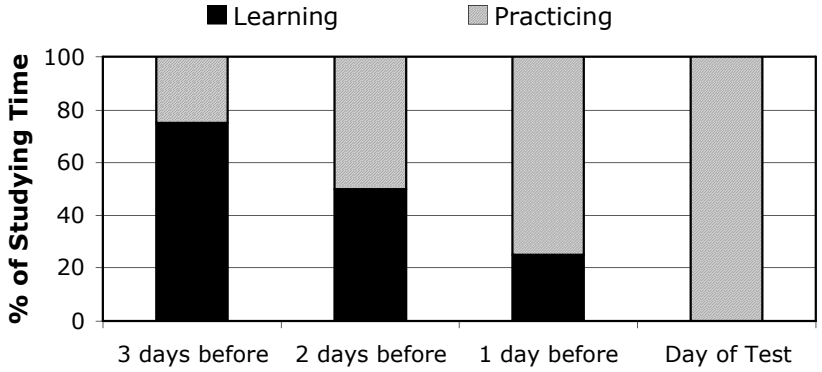
All quizzes are designed to be short and sweet, 10-15 minutes. They are merely to check for understanding and will often be problems shockingly similar to those from the previous homework sets or problems worked in class. Organize your notes, so that different class and homework problems are easy to find. The "hit-and-run" strategy is very important, since time is quite limited: make sure you've done all the problems you know how to do before struggling with the harder ones. When you get a quiz back, make sure to go over the problems you didn't get right—quiz problems tend to recur on tests.

Tests

Tests in Calculus tend to be long (taking the full class period), and are composed of problems on recent material, review problems, quizzes, and a few extras requiring some creative or original thought. There is a multiple-choice section and a free-response section, sometimes with, sometimes without a calculator. The entire course is cumulative!!

- Spend almost all your study time doing practice problems, since that's what you'll do on the test. Since you won't regurgitate material from your notes, *time spent reading your notes is largely time wasted.*
- Your notes *can* be a helpful reference: to determine what kinds of problems might be asked, or to remind you how to do a problem that you've forgotten (or didn't really understand). So skim your notes at the start of your studying, and read in them when you need information they contain; otherwise, put them aside while studying.
- To get a good score on a test, you need to get the problems you know how to do correct, and you need to be able to do them quickly. Starting a few days before the test, spend a little time practicing problems that you already feel you sort of know, and gradually increase that time as the test gets closer. Your goal is to have 8-10 problems that you *know* how to do, that you *think* will be on the test, and that you can solve *quickly* and *correctly*. When working these practice problems, do not focus on specifics of that particular problem, but rather the general methods for that type of problem dealing with that particular skill or concept.
- A good guide to "what's going to be on the test" is the sample multiple choice and "standardized test questions" in the textbook as well as the "writing to learn" questions. Reviewing quizzes and challenging homework problems is highly recommended. If you know how to do most of these problems, you can be pretty confident about the test itself.
- That same time frame—a few days before the test—is also a good time to try and make sense of material that confused you the first time through. As the test approaches, however, spend *less* time learning "new" material, and *more* time **practicing** the material you've just learned. *Material you "learn" the day before the test is unlikely to help you,* since you're not likely to get much credit on those problems without the thorough understanding that only time and practice can bring. Spend the night before practicing, with maybe a little attention to one last problem or concept that still feels tricky.

  These last two points are summarized in the graph below.



- On the test itself, "hit-and-run": first do the problems you know how to do (and read through the multiple-choice and free-response sections quickly to see which part of the test is likely to be more worth your time.) Then go back and do the ones you think you can get with a little effort; check your work, and spend the last five or so minutes on a problem you think that you can make headway on.

Last words

Calculus is challenging, but it's not meant to be impossible. If you're really struggling, see Mr. Korpi to discuss what strategies you're using and how to fine-tune your study habits. I may recommend you look for a tutor, but usually I find that Cal students who get a little help to get back on track don't need regular meetings after that. Remember: math is supposed to be fun (really) even if part of the fun is surviving some of the hard parts.