

5 algebraic skills:

trigonometry identities

the derivatives of inverse trigonometry

hyperbolic functions

graphing by hand upon seeing the algebraic form of a function

basic rules of differentiation (especially the chain rule and the product rule)

3 recommendations

Always do the exam reviews, for they are meant to prepare you for the exam.

Look at the tests from previous quarters, so one can gain a better understanding of what might be on the tests, which causes one to study more accurately.

Practice graphing by hand and make sure you understand what characteristics of the graph do the elements of a function correspond to, so that one won't have to depend on a calculator, which is often not allowed on tests in this class.

2 mistakes

Some students never do the homework. This causes them to be rather unfamiliar with the material so, even if they do understand the concepts, their pace of solving problems are relatively slow, which results in them running out of time during tests.

Others make algebraic mistakes every now and then. Not only will algebraic mistakes affect that particular problem, it might make the numbers much more uglier or cause you to have to use a different and longer method of integration, which leads to taking up more of your time while you're working your way to a **WRONG** answer.

5 Skills to Master Before the Class

1. Knowing the Graphs of different types of functions
2. Double Angle Formulas
3. Completing the Square
4. Logarithmic Properties
5. Simple Arithmetic without a Calculator

3 Recommendations to Increase the Chance of Success

1. Stay on top of the homework. Most of math is application and especially with the new topics we learn in 1B, it helps tremendously to have a lot of practice with applying the theorems we learn in lecture. For this reason, do as many problems as you can from the textbook so you feel comfortable applying the same concepts on the quizzes and tests. Additionally, do the homework problems without a calculator and practice getting comfortable doing arithmetic by hand.
2. Read the chapter in advance and take detailed notes on the content before it shows up in lecture. I noticed that when I took out extra time to read the chapter in advance, I was able to grasp more of the content because I had already seen it once. Reading the chapter ahead of time also helps because that way you can ask relevant questions during lecture.
3. Create a study group early in the quarter. For some specific chapters like the methods of integration unit, it really helps to work out problems independently and then discuss the methods that we used in a group. This way, we not only have practice solving integrals, but we can discuss what method was the fastest in getting to an answer.

2 Mistakes I made during this Quarter

1. I put off re-memorizing identities from trig. This was something that showed up on the prerequisites test and kept showing up throughout the quarter in the form having to use identities to simplify integrals or for U-Substitutions. If I had memorized them earlier, I could've avoided a lot of confusion and frustration midway through the quarter when those identities appeared in more challenging problems.
2. Another mistake I made was that early on in the quarter, I didn't look at old tests and quizzes from past quarters. If I had gone back on Professor Lo's website and looked at old tests, then I would've had a better understanding of what was expected of us on each quiz and test and I would've been better prepared.

- 5 skills to improve on:
 - properties of the integral
 - formula for integration by parts
 - trigonometric integrals
 - trigonometric substitutions
 - integration of rational functions by partial fractions
- 3 recommendations
 - do all the homework of the chapters that teacher taught us
 - understand all the problems of the notebook that teacher wrote on class
 - look the book carefully and search the problems on google, maybe we will get the problems' correct process and answers.
- 2 mistakes
 - I didn't do all the exercises of the chapters that teacher taught us, and I didn't remember several important formulas clearly.
 - After the quizzes or midterms, the teacher gave us the answers. I didn't do these quizzes and midterms again. In these quizzes or midterms, I took several small mistakes because of my careless. Big mistakes was because I didn't learn well.

- a. Before this class I did not master:
- Trigonometric identities
 - Antiderivatives
 - Calculating area
 - Double angle identities
 - Limits
- b. Recommendations:
- Practice as many problems as you can. The problems seen in exams and quizzes are of a wide variety and will cover almost all of the material you have learned in class. Therefore, it would be a good idea to practice all kinds of problems so none take you by surprise on quizzes and exams.
 - Take notes. Math 1B has a lot of material to cover, so I'd imagine it'd be very hard for someone to be able to absorb all that material completely just by listening to the lectures. There is a lot of out-of-textbook material to be learned in class, so if you don't take notes you'll miss out on shortcuts and problem solving techniques that you are expected to know for exams and quizzes.
 - Don't save all your practicing and learning for right before exams and quizzes. Any material can be crammed, but it's very likely that you'll be caught off guard by many of the problems and/or you won't remember how to do certain kinds of problems. Be responsible about your study habits. This is not a class you can do well in without putting in effort.
- c. Mistakes:
- Personally my study habits for this class were not very good. I didn't practice problems at the same time that we learned from lectures, so as a result I tended to fall behind and not completely understand lessons that required you to know material from previous lessons. This also caused for a lot of cramming and procrastination.
 - I didn't learn my prerequisites all too well. As a result I missed out on many problems that could have been easy if I had just recognized certain forms they were in. Things like double-angle identities and certain trig functions could've made this class significantly easier.

There are several algebraic skills give me some difficulties because either I didn't learned about them before or I studied those skills but I didn't fully master them. Below is the list of the skills that I wish I would have learned in more detailed:

- Graph sketching of general popular function including parabola, hyperbola, circle, ellipse, power function, polynomial function, rational function, parametric function, logarithmic function, inverse function. Knowing the general shape of the graph is extremely important as the first step of many MATH 1B problem starts with drawing the sketch of functions.
- Doing simple math without calculator: in MATH 1B there are many steps from the problem until the solution. A lot of those steps require simple algebraic skill including addition, subtraction, multiplication, division, exponent. These skills are not hard but need extreme carefulness. Most of the points that I lost are due to these algebraic mistakes.
- Knowing most of trigonometric identities and popular trigonometric value: A lot of problems in solving integral require working on trigonometry to derive the expression into the form that would allow possibility for integration. Without knowing these identities or formula in deep gives a lot of difficulties later on.
- Knowing how to use TI calculator: it is important because there are some section in MATH 1B that requires using calculators to solve the problem. Knowing how to find definite integral, graphing a function, or add new program on your own TI calculator will save a lot of time. Therefore, it is better to learn how to use the calculator before the need arise so that there is more time for doing the problems instead of studying about the TI calculator.
- Memorizing all the derivatives and anti-derivatives: MATH 1B is built on a large portion of MATH 1A. Memorizing these properties facilitate pattern recognition. There will be a lot more formula and identities to remember in MATH 1B it will become a lot harder if the basic calculus formulas are yet to be memorized

Some recommendations that would help students to succeed in MATH 1B

- In MATH 1B, sign of a value get change back and forth a lot. So it's important to keep track of sign especially in the case of negative. Otherwise, the result will be wrong or in some cases, it become impossible to find the integral.
- There more into the quarter, the harder it takes to find indefinite integral. What used to be the only step to find an anti-derivative becomes a small part in finding the integral. Knowing how to do these step in head save time and help determine which method to go for doing indefinite integral.
- As there are a lot of memorization in this class, it is a good idea to summarize all the lectures note that has formulate, theorem into separate sheet. This way is will become easier to look at when we need to learn or find them for reference without getting distracted by explanation and examples in the book or lecture notes. Besides, it may help in refreshing the material later on when we take other calculus classes

There were some mistakes that I made during this quarter that cost me quite a lot of grade.

- I should have done homework for the sections covered in class the day the topic got covered in class. I lagged behind on homework because I usually don't study new materials that will not be on the Quizzes or Midterm to focus more on the ones that will be tested on the upcoming tests. As there were tests every week, I ended up having a hard time catching up with the homework. It happened that I would only be able to finish the homework of the materials that will be tested the midnight before the test day or the morning on the test day. Rushing wasn't really effective in internalizing the new material
- I should have paid more attention to how I wrote and calculated numbers on the test. I got a lot of points off simply by copying the wrong number from the previous line to the following line. Even though there is a need to rush to the solution on a test, it is critical to make sure what we already knew how to do earn points by ensuring that coefficients are right.

I found that if I had practiced power laws from algebra, trigonometric identities, similar angle geometry, and the formulae for cylinders, cones, and prisms, as well as limits from the previous calculus class, I would have done better.

3 recommendations:

1. Practice the hard problems. Because there is no point doing something you already know. You won't learn anything new.
2. Get help. Do not spend too much time on a problem. After spending 10 minutes on trying to figure out a problem, get help for it.
3. Always learn from your mistakes from every test. The mistakes are your weak point. By improving this, you improve your overall ability tremendously.

2 personal mistakes:

1. Did not hand up quiz. I simply procrastinated. It really hurt my chances of getting an A.
2. Did not pay attention in class. Get proper sleep. Make sure you understand the previous sections before class.

Dear Future Student,

I'll start by wishing you good luck... you'll need it. Throughout the course Mr. Lo warned us that simply doing homework would not be enough to get you by, yet I completed no assignments this quarter and here I am. Based on this I'd like to say that if you were hoping to follow in my footsteps, please don't. The homework provides practice and familiarizes you with the material, and not doing it was one of my biggest mistakes. This, as well as, cramming the day of exams and quizzes to make up for all the studying I did not do. This class would have been substantially easier if I had done those two things. As far as topics to know coming into this class, make sure to know the trigonometric identities. Overall, you should know the trig functions and the radian circle. Know the graphs for some basic functions! This includes the graph of $\ln(x)$ and e^x . They will come up on tests. Be proficient at simplifying functions. It makes things much simpler the majority of the time. And make sure you get comfortable taking derivatives using the chain and quotient rule. It'll help you avoid simple algebraic mistakes.

My advice to you, on top of studying and doing the homework, is to make sure to know the material on the prerequisites exam. When he says it will come up again, he means it. Another piece of advice to consider is to make a schedule for doing homework and studying. This help you stay focused and on top of everything. This is especially important if you procrastinate on everything like me. Lastly, form a study group with others in your class. Having a group of people to struggle with is helpful. They can support you when you're having trouble, and you can do the same for them. This is a tough course; however Bert Lo is a great professor, so you're in good hands. If you work for it, you'll get through it. Good luck!

Sincerely,
Former Student

Math advice from a former student.

So you decided to take Bert Lo. He's probably one of the harder teachers, but you will learn the curriculum well lets dive right in. It's also definitely possible to get an a, there is a lot of leeway.

Some things about his class:

His lectures are much easier cooler than normal. He adds color, and explains things well. He also keeps the class decently interactive by asking the students to do some calculations. Put down that phone game you should have long ago and close that laptop. You need to pay attention because he sometimes has shortcuts that saves 90% of the work and accounts for that on quizzes/tests!

He won't bite. You are required to self grade your own quizzes, this helps a lot for midterms, so if they are close to each other, make sure you grade the quiz before. Talk to him during office hours, you probably can get an extra 5% on quizzes this way! He is nice & humorus, and sometimes points out why this "creative path" won't work sometimes and still give you most of the credit for logic!

At the very bottom of his website, you can look at the previous classes quizzes/midterm. Make sure it is from the same class you're taking (1B for me), and the same topics covered. If you can do this, you are probably good! (I discovered this in time for only for the last three. Sadness!) If you can do the midterm review of past classes, you probably do not need to study that much at all for the week(s). That said, this is a lazy route, and if you want to make sure that you get an A do everything god (or the teacher) says.

What you need to study and know:

You need to know a lot, more like all, of the trig identities. Here is my big three though: If you cannot use or identify your $\sin^2x + \cos^2x = 1$ and the variants, you basically lose out on a couple of chapters and simplifying your intergral completely in some cases. Double angle formulas are use a lot, too. $\sin 2x = 2\cos x \sin x$ is probably the most useful one of the bunch, but you need to be able to identify them and use em properly otherwise again you get stuck. And the third hint, know the derivatives of inverse trig functions. You will be wondering the entire time how to solve it until you realize it's as simple as putting and $\sin^{-1}x$. Those three were my trig issues, but heck, this is so important that it really should be the my five hints, this repeated five(ty) times. If you don't, they usually force you to stop since you can't solve the integral.

Use algebra and simplify wherever and whenever you can. Remember those old days where you were able to just do some things like foil in your head? When you got a calculator for the test?

Well, antiderivatives are not nearly as friendly and you don't have your robo buddy to help. Unlike Bert Lo, they bite, and maybe 4 -5 times if you do not pull out the $X - 1$ or separate it into two fractions.

Oh joy. Who even like having an E or $\ln()$ in their equation? Well, you also need to know what the graphs of e^x and $\ln(x)$ looks like, along with any exponential graph. You need to be able to graph these for the shell method and slice, which is the coolest thing you learn in 1B IMO.

The chain rule is basically in everything. If you cannot do the chain rule, you're basically not even going to get above a 50% in this class. You need to be able to identify it for antiderivatives, use it for derivatives, and will find completely wrong solutions without it. Sorry!

Things that hurt:

Hehe, I did maybe 10 homework problems in total. Now, I think some may get away from this, but maybe test out the last problem of each set, and if you can solve it yourself, it might be ok to move on (don't take my word for it, but it probably will work). Make sure to do the previous quiz too if you do this to get a feel of the type of problems you might receive! Probably took at least 10% of my grade away. Due to laziness.

THE MIDTERM REVIEW IS THE MIDTERM.

Well not exactly, but if you can do the midterm review, my god you don't even need to practice any more. Instead relax and get some sleep. But you better make sure you understand all of it.

Basically, you take the midterm review, take ~50% of the problem out and randomize the numbers, and you get the midterm. I missed 15 points just by not completely understand one problem on the first midterm review, and causing me to panic during the first midterm.

- a. Algebraic skills that I haven't mastered but think you should master before taking MATH 1B:
 - i. Trigonometric identities
 - ii. Basic antiderivatives
 - iii. Linear approximation
 - iv. L'Hospital's Rule
 - v. Polynomial long division
- b. Recommendations for what you should do to increase your chances of success in MATH 1B:
 - i. Do ALL the homework questions and understand why and how you get each answer
 - 1. Most of the problems on the quizzes and exams are similar to the problems on the assigned homework from the appropriate sections. If you can effortlessly solve the homework problems and understand why you got each answer, you should be good for the assessments.
 - ii. Dedicate at least 1-2 days before each quiz or exam to study
 - 1. Dedicate a minimum of 2 hours each of these days to go over the topics that you don't yet master and try to understand them perfectly. If you can't do this on your own, go in during office hours and ask questions or study with classmates.
 - iii. Arrive well ahead of time for each quiz/exam and do some last-minute review
 - 1. On some quizzes I didn't fully utilise the 10 minutes that Professor Lo gives students who arrive early. You should take advantage of those 10 minutes because they can make a difference. Also before exams make sure you have some time to review the concepts that you don't fully remember yet or don't fully master so that it's fresh in your mind for the test.
- c. Study mistakes that I made during MATH 1B:
 - i. Do the homework THE DAY it is assigned
 - 1. I found myself procrastinating the homework to the few days before an exam or quiz and ended up knowing the concepts but not fully mastering it. Professor Lo's class requires you to FULLY master every concept before taking a quiz or exam.
 - ii. Didn't pay enough attention to the lectures
 - 1. Tried to work ahead or study during lectures and ended up missing out on shortcuts that Professor Lo taught. I'm more of a self-learner so this method normally works for me but not in this class.

One of the most important things about this class is being comfortable with algebraic manipulation because complex fractions do show up and, when they do show up, you might not be able to simplify the integral enough to solve it. Second, a strong understanding of trigonometric identities and what each trigonometric function represents would aid you greatly in this class, especially when working with improper integrals. Third, knowing your derivatives tables makes life much easier because a lot of the time you might see a “secant squared” integral and if you don’t know that the derivative of tangent is secant squared, so you’d have to figure it out the long way. Fourth, in a lot of cases, the way we arrive at integration formulas is through “limit-sigma” sums, so it’s important to refresh and understand how to work with sums, especially because Prof. Lo will expect you to find formulas for integrals this way, (he refers to it as “the long way,” and trust me, it is. So get it done). Fifth, although it might be obvious, antiderivatives are integrated in every aspect of this class, so try to understand the antiderivatives you might have been taught in 1A very well; that will make your life easier.

To increase your chances of success, one thing you can do is seat closer to the front row because that makes you less likely to play around on your phone and it forces you to concentrate on the lecture. Another thing is maintaining a proper sleep schedule. There is nothing worse for your grade than having to take a midterm and feeling like death because you slept for only thirty minutes the night before. Finally, it might seem obvious (and Lo does emphasise this in the beginning) but spend at least 2 hours a day doing homework for this class. You won’t be able to succeed if you don’t, because a lot of integral calculus is directly related to how experienced you are with different problems, so spend time doing homework and everything will go smoothly.

One mistake a friend of mine that had to drop the class did was to not adjust his work schedule. He would directly go to work after lecture, work for five hours every night, go home, not do any homework, and just wing every quiz and test - big mistake; set your priorities straight before hand so you don’t waste your time. The other mistake you can easily do is underestimate Lo’s midterms and decide to not look at (or even forget) his review packets on his website. I’ve done this and it’s not like Lo’s midterms are impossible to solve, but if I had practice beforehand with his example problems I would have found the midterm much easier and less stressful.

Although this class might sound quite scary, it's not. Prof. Lo is a great teacher and a friendly guy, so don't be afraid to ask for help or go to office hours; after all it's just math.

David
DeGroot

A. 5 Prerequisite skills to master

1. Double angle identities
2. Log and exponential rules
3. Domains of trig functions
4. Graphs of common functions such as e^x , $\log x$, $\sin x$, $\cos x$, etc.
5. Derivatives

B. 3 Recommendations

1. When doing homework, pay closer attention to the steps leading to the final answer because the logic of the steps gets you more points on the quizzes and tests than a correct final answer. The final answer could be worth one point whereas the steps leading to the answer could have been worth six points. Even when you lose points, you can learn from those mistakes and do better on the midterm.
2. Never get too comfortable. Just because you got a good score on one of the quizzes does not mean you're set for the rest of the quarter. Don't start slacking off because it will show in the midterm, which has harder problems and requires certain steps in order to get the points.
3. Either make a study group or find at least one person who you can work with once a week, especially when you get to indefinite integrals, which have many different techniques. If you work with other people, you might take different steps, leading you to learn a more efficient way to solve the problem.

C. 2 Study or personal mistakes

1. One mistake I made was putting off homework until much later than I had intended because I prioritized homework from other classes. Once I finally got to my math homework, I would become confused and it was too late to ask for help. In the first couple of weeks in the quarter, I started out well, but the workload from other classes caught up with me. I should have made better study habits for the class and stuck to them.
2. I should have paid closer attention to my arithmetic on quizzes and midterms. A simple miscalculation made what was supposed to be a simple problem into a mess. If I had been more organized and consistent while solving the problems, then I would not have forgotten a number somewhere.

[a] 5 algebraic skills you should know

- 1.) Memorize your unit circle values
- 2.) Remember all the trigonometric identities (i.e. pythagorean identities, half-angle, etc.)
- 3.) Understand the basic concepts of graphing since you aren't allowed to use calculators, it will help you a ton when it comes to tests, quizzes, and homework
- 4.) Know basic derivatives (especially for trigonometric functions)
- 5.) General formulas for conics come in handy

[b] 3 recommendations

- 1.) Cut up homework problems.

Trying to solve a problem without knowing what section it's from allows for you to experience a test-like scenario. It makes you think more about everything you've learned at once and how to narrow down strategies. Note: This is helpful moreso on some midterms compared to others.

- 2.) Work in pairs or groups.

Although at times it can be distracting for some, working with others enables you to reason out certain methods and way to solve different problems. At the same time, if math isn't your thing, working with the right people can be a good balance between stress and having an excessive amount of fun.

- 3.) Get help early and often.

Don't be afraid to ask for help from the professor or the tutors at the tutoring center. They are extremely helpful with their explanations and they can even prove to be motivational.

[c] 2 study "mistakes" made throughout the quarter

- 1.) Relying on slader and textbook answers while trying to plow through homework
Truly grasping the concept starts from the solutions you work out yourself and with others. Agreeing with mathematical steps on a screen will turn out to be less helpful in the long run.

- 2.) Not sleeping enough before quizzes and midterms
Little mistakes can bite you in the butt at the end of the day. Not having enough sleep, even throughout the quarter, can negatively impact your potential score drastically.

5 Algebraic Skills:

1. Knowing the graphs of common functions (i.e $y = \cos x$, $y = e^x$, etc)
2. Double Angle Identities
3. L'Hopital's Rule
4. Arithmetic
5. Long Division

Advices:

1. Read, review, homework, repeat. Never slack off on reading the chapter, reviewing the materials after lecture, and doing the homework. Even when you have surpassed a lesson, do not forget to review previous lessons because everything in calculus pops up again- if not in the next up-coming section, in a few sections in the future.
2. Use all the resources that you can find. Go to the tutorial center, go to Professor Lo's office hours, find friends in the class to study with, etc. If math is not a strong point for you, do not try to be a superhero and study on your own. Seek help and make some friends.
3. Make sure you are best friends with your prerequisites. Trying to remember basic prerequisites like the graph of $y = 1 + \cos x$ while in the quarter is extra pain, especially because the materials in calculus build upon each other. If you have a shaky foundation from the start, calculus will only be more difficult.

Mistakes:

1. Not reviewing past homework problem before exams. I would do the homework before a quiz and be really ready for quizzes, but neglect to review them before an exam because we have midterm reviews that Professor Lo gives us. Don't do that. The review packets are nice, but do not fully prepare a student for success on the exam.
2. Do not go to any class days (lecture or quiz/exam days) sleep deprived. Professor Lo writes a lot in his notes, but there are times where he will orally explain something and not write it down. Of course, going into a quiz or exam tired will increase your likelihood of making a mistake. So, be careful and remember to eat and sleep before class.

5 algebraic skills

1. Various form of trigonometric function.

- $\sin 2x = 2\sin x \cdot \cos x$
- $\cos 2x = \cos^2 x - \sin^2 x$
 $2\cos^2 x - 1$
 $1 - 2\sin^2 x$

2. $\sum_{i=0}^n k = k(k+1)/2$

$$\sum_{i=0}^n k^2 = k(k+1)(2k+1)/6$$

$$\sum_{i=0}^n k^3 = [k(k+1)/2]^2$$

3. Odd function definition.

- If $f(-x) = -f(x)$, then $f(x)$ is odd function.
- For checking odd function. Put $-x$ to x .

4. l'Hôpital's theorem.

- If $\lim_{x \rightarrow c} f(x) = \lim_{x \rightarrow c} g(x) = 0$ or infinity, $g'(x)$ is not 0 for all number, and $\lim_{x \rightarrow c} f'(x)/g'(x)$ exist, then $\lim_{x \rightarrow c} f(x)/g(x) = \lim_{x \rightarrow c} f'(x)/g'(x)$

5. Inverse of trigonometric function.

- Inverse of $\sin x = 1/\sqrt{1-x^2}$
- Inverse of $\cos x = -1/\sqrt{1-x^2}$
- Inverse of $\tan x = 1/\sqrt{1+x^2}$

3 recommendations

1. Make a note about the lecture in terms of your own words. Just copy the lecture is fine too. Making note and rewriting the lecture is important. It helps you to understand and memorize the lecture. Also, It makes you easy to find the lecture later(for example, like Midterms)
2. If you have a question about lecture, then meet professor, not your friends. Most of time, your friends does not have solution, professor can solve your problem and also

he can tell you what you need for your question.

3. Make a copy of the quizzes and midterm, and review them after 1 or 2 weeks later taking them. Make a copy of them or take a picture, so you can see them whenever you want. Then, you don't have to find His website for quizzes and midterms when you want to study them. You can save your time if have past quizzes and midterms already. Review the tests after several weeks later helps you to remind the concept and formula that you used

2 mistakes.

1. Don't forget bring your calculator in every lecture. His class usually doesn't allow using calculator, but sometimes he teaches us to how use calculator in 1B. You have to learn that for tests. If you miss that time, then you have to go his office hour for that and usually his office hour takes long time. (if you are not the first person)
2. Do not see your cell-phone or laptop in lecture. His class is very efficient and helpful. If you see your cellphone or laptop, it means you are missing that helpful lecture. Even though you see cellphone 10 minutes, you could miss 1 whole concept.

5 Algebraic Skills

- Knowing what basic graphs look like (x^n , b^n , trig (ex. $\sin x$ & $\arcsin x$), conics, etc.)
- Simplification!
- Pythagorean Identities
- Knowing where discontinuity occurs
- Trigonometry overall

3 Recommendations to Increase Chance of Success

- Doing the homework the night the lesson is given or the next day is major. Quizzes come very rapidly, and you need to have a good grasp of what to do before going in for it. Math is a daily thing, so skipping a few days can make you forget some important information taught, making the homework a lot tougher than it needs to be.
- Attending group tutoring or going into the tutoring room when you don't understand the material, or even just to solidify it, can prove to be major help. When you openly discuss the material with other people, you'll receive different viewpoints, and how other people approach the problem. It can expand your horizon of how to solve a problem, and also adds on problem solving skills you'll need. If you don't understand something, the tutoring room is always open and is *very helpful*.
- Making study cards with the specific formulas/identities/ theorems, and looking at them frequently, and understanding what's on it. There's quite a lot of information to memorize, so having that reference to look at often really imbeds it into your brain. Not knowing the necessary formulas/identities/ theorems will completely ruin an entire quiz or midterm.

2 Study Mistakes that had a Negative Impact

- Looking at the answers for problems I got stuck at (even just a little stuck) on my homework. I didn't always give my best attempt to solve a problem, and always relied on help. While there's nothing wrong with looking at the answers, doing it too often can diminish those problem-solving skills needed for tests/quizzes.
- Not taking the time I needed to properly learn trigonometry really affected the way I performed on certain problems on the test/quizzes. The identities, graphs, and domains are very important and are often brought up on tests/midterms. In fact, one-third of the questions asked involve trigonometry,

[a] 5 algebraic skills:

- Basic graphs; how to shift, stretch or flip graphs based on the basic ones.
- Master taking derivatives, it helps in recognizing some of the patterns in integral.
- Limits, especially those involve “e”.
- Trigonometry identities, trigonometric ratios and special angles.
- Basic exponent rules.

[b] 3 recommendations:

- I usually make minor mistakes that end up messing up the final results, so what works for me is that while doing homework, I would jot down what mistakes that I’ve made or a reminder of what should be done correctly in a different color or on a sticky note. For example, if I forgot to put “+ c” when doing antiderivatives, I would write “missing + c” or “remember to + c !!!” next to the problem. Before quizzes or midterms, I would look at them again to remind myself of not making those mistakes in tests.
- I also recommend using the rest of your test time wisely, don’t submit your test paper early. This recommendation is for people who are usually not careful in tests. If I finished earlier than the end time, I normally would spend the rest of the testing time rereading what I’ve done to see if I made any mistakes. Normally, I had to reread the problems several times before I found the mistakes.
- Don’t skip class since most of the materials are explained very clearly in class. Also, there are some techniques taught outside of textbooks.

[c] 2 mistakes:

- I didn’t do homework during the last few weeks of class and I found that I struggled more in quizzes and midterm 3. It also took me more time to finish the test and I made more mistakes than when I was well-prepared for tests.
- When dealing with complicated calculations, I was too lazy to write everything down step-by-step, so instead, I tried to do the calculation in my head and I ended up miscalculating everything.

5 basic skills I did not master before this class:

- Properties of Odd / Even Functions
- Completing the Square
- Newton's Method of Approximation
- Derivatives of Inverse Trigonometric Functions
- L'Hopital's Rule

3 recommendations for increasing chances of success:

- Pay full attention to the lecture. Mathematical concepts are extremely hard to be understood by self-study. Furthermore, full concentration on the lecture enables you to do the homework problems more easily.
- Do not hesitate to ask questions from the instructor. Learning a new concept for the first time has a lot of holes inside. Asking questions helps you fill those holes.
- In order to best prepare for exams, pick some random problems and try to answer them within a limited time. This helps you get more accustomed to conditions of a real exam. Also, it develops your time-management skill for answering problems.

2 personal mistakes:

- I did most of the homework problems in my mind instead of writing down the whole answer. This caused me not to notice some arithmetic traps throughout the solution of the problem. Therefore, I made so many arithmetic mistakes in exams.
- In exams, I sometimes wasted a lot of time on correcting the mistake that I accidentally made while answering a problem. Therefore, I had to rush when I reached the last problem of the exam, and it increased the chance of making mistakes in my answer to the last problem.

A. 5 Algebraic Skills

1. How graphs look and how they are transformed in equations
2. Trigonometric Identities
3. Completing the Square
4. Continuity of trig functions and identifying discontinuity in equations
5. Antiderivatives (in the beginning of quarter)

B. 3 Recommendations

1. Use every available resource around. De Anza has a math tutoring center designed to help those that need it. There are plenty of helpful youtube videos (PatrickJMT helped me a lot this quarter). And of course the professor is always happy to help directly, by email, and with review material on the website.
2. Don't get discouraged. This was a hard class but giving up will not fix your problem. Eventually there will be a point when you should know how to take the integral of anything, and it will require many hours of practice to recognize the right technique, but will be rewarding at the end.
3. Start off strong. This class starts progressing in difficulty after the first midterm so it would be best to get the highest score you can possibly get on the first midterm. It gives a "cushion" to bounce back on if the next midterms don't go your way.

C. 2 Study/Personal Mistakes

1. Prioritizing different classes. This class requires a tremendous amount of time outside of class for practice, and quizzes are given out about once a week to keep you on track. I had another class that required just about as much time outside of class for practice, and sometimes I would choose to study for one class over the other, and if this class wasn't the one I chose, then it would show on the poor quiz score. If you want to do well, I would recommend having this class be the most important (spend the most time on it).
2. Procrastination. A lot of material is taught each day and not doing the homework can easily make you fall behind. The fact that homework isn't collected makes some people not feel inclined to do it but it will hurt them in the long run. Falling behind once will have you frantically trying to catch up, and it'll lead to skimming through homework just to get the bare minimum knowledge out of it. The bare minimum won't help when tests get complex.

1. 5 Algebra Skills

- (1). Graphs of functions like $x^{(3/5)}$, $x^{(1/3)}$, x^4 , x^7 .
- (2). Derivative of b^x , which is $(b^x)(\ln b)$.
- (3). Graphs of $\sec x$, $\csc x$, $\operatorname{arcsec} x$, $\operatorname{arccsc} x$, $\arcsin x$, $\arccos x$, $\arctan x$, $\operatorname{arccot} x$.
- (4). Derivative of $\arcsin x$, $\arccos x$, $\arctan x$, $\operatorname{arccot} x$, $\operatorname{arcsec} x$, $\operatorname{arccsc} x$.
- (5). Chain rule.

2. 3 Recommendations

(1). Do the homework and mark down every question that you do wrong in the first time. Redo them and cross out these you do right this time and do the remaining ones again when you have time until no one is left on the list. You learn from the questions that you make mistakes instead of from the questions that you have already mastered. And you master the questions that you have done wrong only by doing them again.

(2). Except the odd number questions listed on the homework list, do the even number questions as well. Some of them are worth trying and of different types of the odd number questions. The questions of the quizzes and tests are not that easy without sufficient practices.

(3). Before each quiz/test, review the graphs of $\sec x/\csc x/\arctan x/\operatorname{arccot} x$, and the derivatives of $\arcsin x/\arccos x/\arctan x/\operatorname{arccot} x/\operatorname{arcsec} x/\operatorname{arccsc} x$. They appear so frequently in these quizzes and tests. Although you may remember them clearly in the *beginning of the quarter*, you may forget some of them in the *middle of the quarter* or towards the end of the quarter.

3. 2 Study or Personal Mistakes

(1). I didn't show all the algebraic steps on my quiz/test paper. Do not just go over them in your brain and skip them because every step may bring you some point. Sometimes I skipped some algebraic steps in quiz and got points deducted for them. It really hurts when you obviously know them but cannot get the points for them.

(2). I didn't follow the instructor's way of solving problems every time. These questions of quizzes and tests are not that time-consuming if you follow the instructor's way of *solving problems*. For example, *table method* that has been mentioned again and again in class. It will save you a lot of time in quiz/test.

5 algebraic skills

1. Graphs of common functions (Trigonometric functions, Inverse Trigonometric function, exponential function, logarithmic function, etc.)
2. Antiderivatives of common functions
3. Calculation of Trigonometry (I was often confused $\sin(\pi/3)$ with $\cos(\pi/3)$)
4. Characteristics of 'e' and 'ln' ($\ln(e)=1$, $e^{\ln(x)}=x$)
5. Sigma calculation ($\sum i = n(n+1)/2$, $\sum i^2 = n(n+1)(2n+1)/6$)

3 recommendations

1. Take note carefully. The professor teaches us not only fundamental things which are on a textbook but also some beneficial techniques which are not on a textbook. To get decent scores on quizzes and exams, students have to be able to those techniques.
2. Don't forget to review what you learned as soon as possible. Chapter quizzes come earlier than you expected. The earlier you prepare for quizzes and exams, the better score you can get. In addition to reviewing materials covered in classes, I recommend you do exercise problems (homework) at the same time. Tackling problems makes you understand what you learned deeper.
3. Go to the tutoring center. If you have any difficulties with the class, you can ask questions to not only the professor but tutors. They are very kind and willing to explain to you.

2 study or personal mistakes

1. Messy calculation and writing in quizzes and exams. Because of this, I had a lot of difficulties to check if my solving process is correct. I began to write more neatly to prevent it.
2. I got sick and couldn't fully concentrate on classes. Health is the top priority. When I was sick, I couldn't even understand what my professor explain and quizzes were disastrous. Be careful with your health.

[a] 5 Vital prerequisite skills

- Trigonometric identities: For this course, pythagorean and double angle become especially important along with the basic ones.
- Memorizing derivatives and anti-derivatives: Although this seemingly goes without saying, I took half a year break from math after high school and really felt the impact of having poor fundamentals.
- Algebraic manipulation: It is crucial to be able to manipulate expressions, a sentiment realized in chapter 7.5.
- Special angles (and by extension the relationship between $\cos 2x$, $\cos x$, $\sin 2x$, and $\sin x$)
- Basic logarithmic properties.

[b] Recommendations for future students

- I cannot emphasize enough to make use of office hours. Going to office hours not only gives you opportunities to debate back for points, but more importantly allows you to see exactly what caused the mistake you made. You could then apply these learned lessons to the midterm.
- Know the prerequisites like the back of your hand. These prerequisite skills will not only prove useful for this course, but also for future math courses too. I missed many easy points due to not having my prerequisites down pat.
- Although this again seemingly goes without saying, pay attention to lecture. The professor is a man of his word, so if he says that he will put a certain aspect of a unit on the midterm, it will always be there. Focusing on points he emphasized during lecture gave me a few easy points.

[c] Personal/Studying mistakes

- I failed to allocate extra time to memorize prerequisites during the beginning of the quarter. I consequently missed very key points that may have gotten me a grade that I was more satisfied with on early midterms/quizzes.
- I also neglected to reach out to my peers when studying. This had a negative impact on my third midterm, as problems that are not done “blind” do not have the same benefits as ones that are done blind. I should have asked peers (holds true especially for unit 3) to send me problems so I could simulate doing said problems for the first time, as much as possible.

A. 5 algebraic skills you should master.

1. Trigonometric identities: make sure you can solve problem proficiency by using \sin , \cos , \tan , and know the relationship between them, for example: $\cos x / \sin x = \cot x$ etc.
2. Graphing: Make sure you can graph the functions correctly, for example: e^{3x} , e^{-x} , $\sin 3x$, $1/x$ etc. Otherwise, we would get 0 point on the quiz/test.
3. Derivatives of trigonometric functions, logarithmic functions. There would be a lot of questions switch between derivatives and antiderivatives, make sure you would not mess them up.
4. Being able to solve problem by using The Product and Quotient Rule, as well as Chain Rule. There will be a lot of problems based on those rules.
5. Limits: DNE issues and know the value well.

B. 3 Recommendations

1. Redo quizzes and midterms several times seriously, make sure you understand the mistake you made. And know well on how to solve the problem correctly next time, because we only practice homework based on the book, so quizzes and midterms are the only changes to work on the problems professor make, by working on those problems, you could know well on what kind of questions that professor wants us to master.
2. Don't be too nervous. To be honest, Math is hard for me, so I do study a lot, spend most of my time on practicing, and I do each single question on homework and review the quizzes several times, even could not sleep well which because math problem would go around my head all the night. Unfortunately, I am too nervous to focus during the test, which I could get the right answer after test or by doing for practice. But because of nervous, my brain stuck. What I recommend: do not be too nervous about the test, relax

and just do what you can do.

3. Go to office hour, study in group or go to math center, if you have any question, go to office hour is a good choice, the professor would be there for you. also, you can go to study group and math center. All the students are studying in math, and there would be TAs in math center, you can ask all kind of questions and can solve problem all together by discussing. Those are all help a lot.

C. 2 study or personal "mistakes"

1. I always forget to write "+c" at the end of antiderivatives, in midterm 1, almost 15 points deduct because of "+c" and forget to rewrite U back. For example, let $u=2x$, at the end of the equation, should write $2x$ back instead of u . I made the same mistake several times and that is so terrible.

2. The other mistake I made is in midterm 2, I failed this midterm, and most of the mistakes I made is about graphing. I draw the wrong graphs, and then all the equations I wrote were wrong. Finally, 0 point I got on those questions. And what I want to say is, graphing carefully and nicely, then double make sure the graphs are right then solve the problem. Otherwise, you would fail the midterm.