

A. An algebraic skill that everyone should master is learning the domains and shapes of each function. Another skill I should have mastered are the trigonometric functions and how they relate to each other. If your algebra skills are slow such as simplifying/factoring/expanding and such I would practice that before to make sure you feel confident when doing it. One more would be to learn/recall your formulas for geometric shapes. Lastly, it is really important to learn the theorems/definitions of concepts and not just memorize them but understand why they are defined that way.

B. My first recommendation is for students to ask for help as soon as they do not understand a concept because a lot of the concepts in Calculus build on each other and if you do not have a great understanding of a concept and move on from it, it will definitely come and will only be much more difficult.

My next recommendation is to make sure to spend your time slowly working through the prerequisite test and making sure you understand each concept before moving to the next one because pretty much all of them will be used in Calculus.

My last recommendation is to find a partner/group that you can work and do homework with. It helps keep me motivated when I work with someone to do the homework. It also help if I get stuck and my partner can explain what to do next instead of looking up the answer.

C. A personal mistake I made this quarter was not always going in to defend my work after the quizzes. There were times that I thought I would not get any points on the quiz because my answer did not match exactly to the answer key. There were times I did end up defending my work after expecting the same outcome and ended up getting more points than I thought I would earn. One should always try so that they can earn the max points possible to help their grade. Another mistake I made was not reading the chapters ahead to get an idea of what to expect I would be learning for the day. I should have spent a small amount of time reading through the material and trying to understand the concept before so when I went to class I could follow along and solidfy my understanding of it after the lecture. Instead, I tried to make the connections while copying/listening the lecture and it put me at a disadvantage trying to understand the concept myself while also following along.

# Personal Development Exercise

## 5 skills I didn't master but should have

- Trigonometric Identities (ie.  $\sin(a+b)$ ,  $\cos(2b)$ ,  $\tan(a/2)$  etc.)
- Simplifying exponents (before finding its derivative)
- Memorizing basic trigonometric values (ie.  $\sin(3\pi/2)$ ,  $\cos(2\pi)$ ,  $\arctan(1)$  etc.)
- Learning hyperbolic functions
- Memorizing the domains of certain functions (ie.  $\ln(x)$ ,  $1/x$ ,  $\arcsin(x)$  etc.)

## 3 things to increase success

### Actively participate in class

Sitting in the class and copying what's on the board isn't much different from sitting at home and reading the textbook. This is also the best time to clarify a doubt. More likely than not, you're not the only one who is having trouble understanding a concept.

### Go for office hours and sign up for a tutor

Still having trouble understanding a certain concept? This is your next best option to figure out what going on in class.

### Form a study group

If you're like me and have a hard time focusing, forming a study group may be a good option. When you're surrounded by people studying, you're less likely to get distracted.

## 2 mistakes I made

### Didn't get enough sleep

Math is not one of those subjects where you can come into class droning and half asleep. Make sure you get enough rest before class.

### Didn't read the textbook

In the beginning of the quarter, I didn't read the textbook before class and found it challenging to follow what was going on at times. After I started reading the book before class, I had an easier time understanding the concepts.

**A) 5 algebraic skills from algebra, geometry, precalculus and trigonometry that you (or someone you know in the class) did not master before this class that caused you to do worse than you could have if you had mastery of them**

1. Knowing the shape of exponential and logarithmic functions, together with its domain
2. Knowing the formula to find geometric shapes (finding the volume and area of a certain shape eg. Cones/cylinder)
3. Knowing the trigonometric identities, especially conversions of common angles in radians, basic and Pythagorean identities, and double-angle identities.
4. Knowing the logarithmic rule (equation with exponents, multiplication, and division)
5. Summing, subtracting and dividing by infinity, most importantly dividing by 0.

**B) 3 recommendations for what a student should do to increase their chances of success, and why each one is helpful**

1. It is very important to do your homework to increase the chances of scoring high in your midterm and quizzes. All of the midterm questions are very similar to the ones in the assigned homework questions. Make sure to spare at least an hour each day to do the homework. It is also very important to do it by yourself and understand how to solve it.
2. Do not cram studying for the exam in the last minute as you need to take some time to get yourself familiar with the type of questions that might come out in the exam. This helps a lot in preparing yourself to face any questions given to you. Make sure to start studying as soon as the midterm questions are posted.
3. Make sure to come earlier during exams because it is really beneficial as you get some extra time, which you could use to check your work to make sure you are free from careless mistakes. You could also get some extra time to solve certain solutions in which you are struggling with. This is really beneficial as it can bring up your overall grades.
4. Do not underestimate the amount of sleep you get as it is very crucial before the test. A person who lacks of sleep will not reach his/her full potential as they are already tired, which results in more mistakes. By sleeping more, you will be more refreshed and the materials you have studied will remain in your brain.
5. Make sure you read the materials ahead of time. By doing so, you will be able to understand more in class. Also, you don't have to understand all of the materials when reading it by yourself. Simply read it and your teacher will help you understand the material as he proceeds to explain about the chapter.

**C) 2 study or personal "mistakes" that you (or someone you know) made during this quarter that really hurt your chances of succeeding, and why specifically each one had a negative impact**

1. I did not spare enough time to do my homework, therefore sometimes I wasn't able to do all of the assigned homework. This really hurt my chances of succeeding as the midterm and quizzes are very similar to those in the homework. By not doing some of my homework, I find it difficult to solve some questions and it took me more time to solve one question.
2. I made a lot of careless mistakes during the quiz. Such mistakes vary from miscalculation or sign problems. Although this seems like a simple problem, yet it impacts so much as the final answer will be different. I suggest that to prevent careless mistakes, you would want to come earlier during quizzes and tests and also to practice a lot to prevent such silly mistakes.

### **5 Algebraic Skills Not Mastered**

- Knowing the graphs of functions
- Knowing identities especially in trigonometry
- Differentiating between undefined and cannot be determined with indeterminate values
- Natural logarithm
- Knowing your infinities

### **3 Recommendations**

- Study all prerequisites before the start of week 1
  - Helpful since this will boost your chances for getting points for the 30 point test in the beginning of the quarter
  - Can help solidify and/or review previous topics that will be coming out in Calculus 1A
- Make sure to either be ahead of homework or keep close track of it; do all of them
  - Will prevent you from falling behind
  - Will serve as good practice for quizzes, midterms, and final
- Always go to office hours to defend your answer
  - Can still gain some points for approach to the problem and/or consistency
  - Helps you learn from your mistakes and hear explanation of incorrect answers

### **2 Study Mistakes**

- Not making study guides/ summaries
  - Not enough review
  - Retention is not that good
- Not asking questions in class if unclear or simply cannot understand
  - Can lead to a shaky foundation or knowledge of topic
  - Even if you already know the topic, asking questions can help in retention of information

[a] 5 algebraic skills from algebra, geometry, precalculus and trigonometry that you (or someone you know in the class) did not master before this class that caused you to do worse than you could have if you had mastery of them

1. Knowing how to identify domain and range
2. Trigonometric functions especially the basic ones.
3. Remembering the hyperbolic equations
4. Graphs of roots and exponential functions
5. Limits

[b] 3 recommendations for what a student should do to increase their chances of success, and why each one is helpful

1. Always do your homework, never put it off till later. It becomes a chore once you do that. So do your homework while the lecture is fresh in your mind. If not it will be more work as you have to revise from the start the material.
2. Know yourself well. If morning classes are not your thing and you are not a morning person don't take morning classes. As the chance of you absorbing information from lecture when you are still sleepy is very low.
3. Always learn from your mistakes. Always revise your quiz mistakes, as failure is the best teacher after all. And play special care to be able to solve the the next time a similar question appears.

AND

[c] 2 study or personal "mistakes" that you (or someone you know) made during this quarter that really hurt your chances of succeeding,

1. Sleeping late, not the best idea when you have morning class. Another bad idea is pulling an all nighter. As there is always the chance you fall asleep while studying and you don't wake up for lecture. And class moves relatively pretty quickly so don't oversleep and miss lecture. So do not be like me and sleep late and miss lecture, you miss a lot of material. And you will be super careless during quizzes and exams.
2. Make sure to always know your prerequisite material. They are the basis of the material you are studying. Not knowing your prerequisite is just asking for trouble. As a solution have these prerequisite material within it. So make sure to know your prerequisite.

### **3 Recommendations:**

1. Do all of the assigned homework, on top of that, do more. After taking this Mr Lo's class for 3 consecutive quarters, I realized every problem on the quiz/midterm is a variation of the homework problems and the midterm reviews. In order to succeed, just do all the work assigned, and a little more on top of that.
2. Do not just forget about the previous chapter just because you finished the quiz or midterm. A lot of the material in this class will come up in later quarters. In order to succeed, you must read through the notes, lectures, and homework assignments for previous chapters.
3. There are lot of of theorems and definitions involved in this course. In order to succeed, you must actually understand the theory/definition itself, as suppose to memorizing them. If you understand how a theory/definition works, to be honest, you don't even need to rely on your memory.

### **2 Mistakes:**

1. Studying for a quiz, midterm, and final on the last day. Typically, studying at the last minute is challenging because there are so much material in every quiz, midterm, and final. In addition, studying at the last minute also causes a great amount of stress. In order to succeed, do all the homework questions right after the lecture, so the material is still fresh in your head.
2. Do not wait for the last minute to visit Mr. Lo for problems related to self grading. Generally speaking, people, especially students, like to procrastinate. If your quiz was due on friday, do not wait till thursday to go see him in the tutoring center. Visit him two or three days prior to the due date of the quiz so the line of the wait isn't as long.

[a]

Starting to study in this class, you should know all the basic skill from algebra, geometry, precalculus and trigonometry:

- A really strong base in Trigonometry.
- The role the unit circle plays in defining trigonometric functions.
- How to draw the functions. Ex: polynomials, quadratic, rational, ...
- How to apply the Law of Sines and Cosines.
- How to find mean value of the six trigonometric functions as well as graph them.

[b]

If you want to success in this class, you need to put time and effort to prove it. If you are lazy in this you will not never get the high score. From my experience, you should spend at least 4 hours a day to study and do all the homework. The more time you study, the more successful you are in this class.

Trust me!

Doing homework is not enough, you have to understand the lecture clearly in order to do quizzes and tests. My recommendation is doing homework by yourself and do not look at the answer before finish the question.

Do not do everything alone, you should find someone in the class in order to do homework together. It is better than figuring out the homeworks alone.

[c]

At the beginning of the class, I did not put any efforts for this class. That is the biggest mistake I made, I kept getting low scores in quizzes and midterm which I could not get back in order to get good grade. However, I really appreciate this class because it changes the way I study, and how lazy I am in the past no longer exist.

Because I skipping class from 42 to 1A, I missed a lot of things in 43. In other words, if you want to be successful in this class, you must know everything in precalculus and trigonometry, algebra.

Advice for future MATH 1A students:

- A. Pre-requisite skills that are imperative to success in this class:
  - a. Numeracy and understanding concepts with infinity or 0
  - b. How the graphs of certain functions look ( $\ln x$ ,  $|x|$ ,  $\sin x$ ,  $\cos x$ ,  $e^x$ , etc.)
  - c. Trigonometric and inverse trigonometric identities
  - d. Hyperbolic functions
  - e. How to find the domain of a function
- B. Recommendations:
  - a. Do more than the questions Professor Lo assigns on the homework list, the more practice the more prepared you are for the quizzes and tests. Often the questions that do show up on the quizzes are essentially the same as questions from the textbook.
  - b. Pay mind to the midterm review packets because often questions will come up on the midterm that are nearly identical to those on the review packet. Also there will never be a case in which you are asked something that is not covered in the review packet.
  - c. Don't be afraid to collaborate with your peers because they can be a great source if you don't understand a concept. Additionally, the tutoring center is available for your questions.
- C. Mistakes:
  - a. Not contesting quiz grades during office hours. Professor Lo almost always gives some credit if you are able to demonstrate that you understand how to solve a problem, even if you don't have the correct answer or solved it in a bit of a different way.
  - b. Cramming the night before. For almost any class, cramming and studying the night before does not help you retain much information. Neglecting to get a healthy amount of sleep the night before will also hamper your overall performance.



## Personal Development Calc 1A

### Algebraic skills that I did not master

- I did not master how to use Trigonometric functions in terms of their properties (such as formulas like double angle)
- I did not master all of the formulas for different shapes, which would have helped when we got to related rates
- I did not master  $e$  (in particular its relation with  $\sin$  and  $\cos$ ), which was used very much in this course
- I did not master how to completely simplify my answers (this one hurt the most when dealing with multiple derivatives)
- I did not master the different functions and how to find certain key points such as asymptotes

### Ways to increase chance of success

1. **DO THE HOMEWORK!** Not only does it prepare you for lecture and exams, there will be questions on the exams and quizzes that will look very much like problems from your homework. Homework is there to help, not stress you out.
2. **USE OFFICE HOURS!** If you don't understand something, talk to the professor. He will be able to clarify what he meant during a lecture after class and give you feedback on your quizzes.
3. **FIND SOMEONE TO WORK WITH!** There are quizzes that you will need a partner on, so doing that quiz with someone you have been doing the homework with for the quarter rather than finding someone later. You will do much better if you are able to help out someone else in Calculus than just relying on your self-learning and intuition.

### Mistakes I made during the course

1. I procrastinated hard on my studying this quarter. I tried to do things well at first during the quarter, but I ended up not being able to keep up with the class because of it. I learned too many things after the exams had already happened and we were already several sections ahead at that point.
2. I didn't get enough sleep during this quarter. This made it really hard to focus on many of the exams and questions that I could have gotten I couldn't remember due to how tired I was. I would get 6 hours of sleep max during the week, which isn't ideal for someone who needs that extra sleep.

## Personal development

[a] I did not master some of trigonometric identities such as  $\sin 2x = 2 \sin x \cos x$ ,  $\cos 2x = \cos^2 x - \sin^2 x$ ,  $\tan^2 x + 1 = \sec^2 x$  and hyperbolic trigonometric identities  $\cosh^2 x - \sinh^2 x = 1$ ,  $\tanh^2 x + \operatorname{sech}^2 x = 1$ .

This lack of mastery caused problem when I manipulated some differentiations of trigonometric functions and hyperbolic functions.

[b] ① Students should be familiar with elementary functions because you have to think about functions a lot in studying calculus.

② Students should be interested in Mathematics. Because studying calculus without interests is gonna be very tough I guess.

③ Students should be familiar with other academic fields. Because knowing how you can apply calculus to real world encourage you to study hard.

[c] ① I made small mistakes on quizzes and exams because of lack of sleep. Lack of sleep could causes you to poorly perform in your class.

② I did not make friends in my class on the beginning of this quarter. This causes me to rarely talk with someone who has the same major fields as mine. To talk with such people encourage you to work hard.

[a] Algebraic Skills not Mastered That Made the Class Harder

- Natural log functions
- Inverse trig functions
- Working with fractional exponents
- Working with negative exponents
- Knowing the general values of trig, secant, and cosecant of angles

[b] Recommendations to Do

- Get comfortable with knowing the logic behind the mathematical actions.

If you can understand logically why something is happening then it makes the course much easier to follow. You do not have to end up remembering everything because if you can see why such a thing happens then you can come up with solutions from the logic. There will be too many little things to remember if you had no grasp on any of the logic.

- Always go to the office hours after a quiz to get points back and partial credit.

After grading a quiz, if one of your solutions does not fully match the solution key, you can still go to the professor and get back partial credit for many problems. Looking at the solutions also can help you find out where you messed up and it can show you how to do that sort of problem in the future.

- Do all of the midterm review packet.

Most of the midterm comes directly from the packet or the homework. If you can do the problems on the packet, then you often can do the problems on the midterm. This is the most helpful type of practice for the midterms.

[c] Mistakes to Avoid

- Not doing all of the homework.

Sometimes the homeworks are long so you do not feel like completing them. However, the quiz and test problems can come from any part of the homework so having practice with everything helps a lot. By not doing all of the homework, sometimes there were problems that I had not worked with before on a quiz or test which made them much harder to complete.

- Not reading the book.

Sometimes I did not read the textbook or read all of the textbook before and after class. This made it harder to understand new concepts sometimes. The book has a lot of information and explains a lot of things which you can miss out on by not reading it. I had some gaps in my knowledge by not reading the textbook.

## Math 1A Personal Development

**A/ 5 algebraic skills from algebra, geometry, precalculus and trigonometry that I did not master before this class that caused I to do worse than I could have if I had mastery of them.**

- Understanding the Hyperbolic Trigonometric Functions
- Knowing the graphs of the Trigonometric Functions, Inverse Trigonometric Functions and Logarithmic Function
- Knowing the Unit Circle
- Knowing how to find the volume of a cone, a cylinder, a cube, and a rectangular prism.
- Knowing how to solve polynomial equations

**B/ 3 recommendations for what a student should do to increase their chances of success, and why each one is helpful**

- Find a study group.

Highly recommend you to find a study buddy or study groups immediately. Studying in group helps you a lot in homework. Also, it is easier for you to find a good partner for Partner Quizzes. Honestly, Partner Quizzes are my highest quizzes in the quarter because I have found a perfect partner to work with.

- Do the assigned homework.

Even though you don't have to turn in the homework, you should do it in order to get good grades. If you don't do the homework, 90% you will get below the C at the end of the quarter. Doing homework will help you understand the material and prepare for the upcoming quiz.

- Do the Midterm Review Packages.

You should complete the review packages before the midterm because most of questions in the tests are similar to the ones in the review packages. Also, the review packages cover MOST of the material that you need for midterm tests so completing the review packages is same as you already review 70% of the material that you need.

**C/ 2 study or personal "mistakes" that I made during this quarter that really hurt my chances of succeeding, and why specifically each one had a negative impact.**

- Not reading the textbook daily

I started to not reading the textbook daily after the third week of the quarter and my grade went down immediately. Reading the textbook is more important than you think. Reading the textbook daily will help you follow and understand the lectures easier. You should read the textbook before and after the lecture in order to do well in this class.

- Falling behind in homework

I only do the homework of the sections that included in the upcoming quizzes but not the ones, which are assigned everyday. Therefore, I always fall behind in homework. Day by day, i fall more and more behind and this gives me a big stress everytime the quiz is coming.

## Calc 1A reflection

5 skills from previous mathematics to improve on

1. Polynomial long division
2. Know all the core alg/trig graphs by heart
3. area/volumes of basic shapes. (e.g. cones, trapezoids, etc.)
4. Trig identities, as well as laws of sine/cosine
5. Proper Factoring

3 Recommendations

1. Do not skip class.
  - a. Why: Mr. Lo is a good teacher and will explain all the concepts to students using a logical approach (my experience thus far). This approach greatly eases trying to understand the concepts in the textbook, and often makes the homework easier to do than reading the lessons in the textbook for reference.
2. Use all available resources
  - a. Why: There is a teacher, tutorial center, textbook, classmates, as well as online resources to help supplement any knowledge needed in order understand concepts taught in class. If at an point in time you are struggling, or want more clarity, I recommend constantly consulting at least 3 of the above resources.
3. Practice
  - a. Why: In my opinion there is a logical flow to math problems. Though some may seem incredibly complex, and entail a lot of work, enough practice can help condition the brain to recognize how to deal with these problems more effectively in the future. I also believe that math is a subject that constantly builds upon itself, calling back to previous lessons. With this in mind practicing now builds strong foundation for the future lessons you will likely encounter. (Should you go beyond 1A)

2 Mistakes

1. Simplify your work. Not just at the end, even during the process of solving, simplify the problems.
2. Time management during tests. Following Mr. Lo's guide on how  $x$  amount a points =  $y$  amount of test time in minutes. Example: a 50 point test taken over the course of 50 minutes means that each minute is worth one point. A fifteen point problem should ideally take no more than 15 minutes.

## Personal development exercise

I didn't do very well in math 1A class but I learnt some things from it to do better at my future math classes, I realized that I made a lot of mistakes that I could've easily avoided had I been not lazy or more aware.

- Make sure that you know your previous math class lessons and materials very well otherwise you'll struggle at 1A if you're missing important information from the previous classes. I personally jumped into 1A thanks to the pre req test but I haven't taken a math class in quite a while and certainly haven't taken 43 or the ones before it so I found myself struggling as I was having to learn not only new things from 1A but the things that I missed from 43 simultaneously. Completely overwhelmed myself.
- Do the review packets, they're very useful as they're similar to the real tests although perhaps because I was missing information from the previous classes it seemed to me like the real tests are more difficult than the review packets still
- Time yourself doing problems, when you're doing a test you have very limited time and so you need to practice answering questions quickly as well as knowing how to answer it.
- Do the textbook homeworks, it might not be graded or "required" to do but you are required to do that to be able to do well. I had made a mistake that I didn't do all of the homeworks during the first half of my quarter and I think that really hurt me in understanding those lessons in that period and also after.
- Make sure to have enough sleep, there were times when I procrastinated and didn't do the homeworks or learn for the quizzes until the last day and that caused me to stay up late whenever I also unexpectedly get extra work from my other classes. So do your work whenever you can and do not procrastinate.
- Ask questions to your friends and tutors in the tutoring centers, I didn't do that when I was taking the class since I never do that in my other classes and always had good grades in other classes as I'm usually a fast self learner but in hindsight I think I should've done that a lot as calculus is difficult and way different than any of your other classes. As a result I didn't understand a lot of things and usually tried to understand it myself from reading notes and the textbook myself. Even if I felt like I understood it usually during the tests I wasn't able to do it correctly still so I think that having someone explain it properly and be able to answer your questions might help a lot.
- Take notes on EVERYTHING. I took notes on everything in class, and although I never did very well on anything in the class quizzes and tests I believe I would've done way worse if I hadn't done so as not everything is in the textbook and the lectures are sometimes easier to understand too.

## Personal Development Exercise

[a]

1. Hyperbolic Functions
2. Inverse Trigonometric Functions
3. Pythagorean trigonometric identity(tan & cot)
4. Law of cosines
5. Domain & Ranges of Trigonometric Functions

[b]

1. Do all the exercises on the homework list! Since there is only 40 minutes on quizzes you have to do everything fast & accurate
2. Be sure to take notes in class since professor will show the correct & strict way to do mathematic proofs
3. Keep updated from professor's website and check emails. Lots of reviewing materials will be there.

[c]

1. Not prepared before class. If do not do preparation one would not be able to keep up with the lecture.
2. Be late to talk with professor to grade quizzes. Procrastination not only hurt score but also lose the chance to learn from the discussion with professor.

## Personal development exercise

- **Algebraic skills**

- Still have confusion on special angles.
- Forget about some useful equations such as cosine rule.
- Weak graphing skills (I panic when I need to graph)
- Cannot memorize the graphs of some basic equations ( $x^3$ ,  $1/x$  ...)
- Confusion in numeracy ( $1/0$ ,  $0/0$ ,  $0/1$ ...)

- **Recommendation**

- Get enough sleep before quizzes and midterms — lack of sleep affects your brain to function well. Also, enough sleep allows you to have a clearer logic of what and how you are performing during quizzes and midterms.
- Do study the theorems and definitions — they are the easiest point you can get because it only requires memorization. Moreover, knowing the definitions and theorems well allows you to have a better image of what the professor is explaining when introducing a new relevant theorem.
- Jot notes — notes really help a lot! You can refer to your notes when you are doing homework, so you know about the format and method of solving problems. I personally like reading notes once before quizzes and midterms so I will have better mind of what to do during the tests. In addition, jotting notes make you keep track with the lecture and stay sober during lecture.

- **Study or personal 'mistake'**

- Plan insufficient time to do exercise — I did finish exercises for test but I could not make it for the practice part. This kind of makes me lack of practice so I did not perform well.
- Too careless during tests — sometimes I may take shortcuts and make mistakes during the algebraic process. I will leave out part of the equation during the tests and mostly the chain rule!



[a]

1. Inverse trigonometric functions. You have to remember the inverse trigonometric functions and their principal values.
2. Similarity. Similar triangles will pop up a lot in related rates so it's important to know it<sup>3</sup>
3. Factoring out negative/rational exponents
4. Rewriting radicals as exponents
5. The Pythagorean identities for trigonometry

[b]

1. If you really want to improve your math, try doing as much questions as you can instead of just the selected homework questions. Some of them are really interesting and can really deepen your understanding of the subject. Even if you don't get it right, it's still good practice for your problem solving skills.
2. Find study groups and study together. The professor isn't always there to help and sometimes you might have to figure things out on your own so having a friends to discuss problems and lecture material is very important.
3. Practice your algebra, even the basics. Simply knowing and understanding your algebra simply isn't enough for higher math courses, you have to be fluent, quick and accurate with your algebra in order to keep up with what's being taught in class and to be able to finish the problems in reasonable times.

[c]

1. Don't memorize the math if you don't understand it. It's easy to do enough problems to memorize the solution process but a good chunk of the midterms and the final will definitely not be what you've memorized before. You might get lucky and pass that one course because the tests were easy, but it always comes back to bite you in subsequent math courses because you need to understand the material properly in order to learn what's being taught in later courses.
2. Cramming just does not work with math. With math, it's far better to revise and study a bit of it everyday rather than just studying everything in one go a day before tests. It also helps because some things you learn today might be really important for what's being taught the next day so revising it beforehand will make the next lecture a lot easier to understand. There's a lot of information and logic behind math so cramming will just make your understanding of it poor and jumbled.

### List of 5 skills

- Knowing when to simplify
- Knowing the graphs of basic functions such as  $\ln x$ ,  $e^x$ ,  $\arcsin$ ,  $\arccos$ ,  $\arctan$
- Along with knowing the graphs, know how to find the domain of a function, or know what it is
- Knowing the equations of a triangle such as a similar triangle and the law of cosines
- Know how to simplify compound fractions

### 3 Recommendations

- Learn your theorems and definitions. This will be your backbone to your understanding of Calculus. If you have a solid understanding of this you can always fall back on it and there will always be questions on quizzes and tests based on definitions or theorems.
- Practice finding derivatives and being comfortable with all of the rules, especially the chain rule. This is important because everything done in this class revolves around being able to take the derivative of any function.
- Do the proofs. Although they may seem daunting, it will be to your benefit to try to solve them based on what you do in lectures as the ones you don't do in class will be on quizzes or tests.

### 2 Mistakes

- Not practicing enough homework questions was a big problem because a lot of this class required thorough practice of the new rules, theories, and definitions to solidify the foundations of Calculus.
- Not getting help when you don't understand something because that could lead to holes in your logic when solving a problem. Ask for help when you are truly stuck and it will help you progress.

Deficiencies in previous knowledge:

1. Not familiar with logarithmic and exponential functions. Having forgotten most of their properties and graphs, I have a hard time dealing with logarithm differential and L'Hopital's rule regarding exponential indeterminate.
2. Not familiar with hyperbolic functions.
3. Do not know how to find LCD efficiently.
4. Not familiar with  $\csc x$ ,  $\sec x$ ,  $\cot x$  and their graphs. Having hard time finding the discontinuity points and zero points of these functions.
5. Not familiar with the graphs of rational functions and power functions. Having hard time telling if they are differentiable and their behavior when approaching infinity by imagining the graphs.

Suggestions

1. Keep AHEAD of the track. You should always preview the textbook before coming to the class, or you will definitely get lost in the lecture.
2. Recognize the types of the problem. Categorize the problems you have encountered. There ARE templates, but you have to know which one to use. Practicing the same type of problem helps a little, especially those that can be directly solved by plugging in formulas or conclusions (ex. Find the limit, find the derivative, etc.), though completing which can give you a sense of proficiency and achievements (because they are easy), you have to truly understand the definitions and concepts, and be able to convert, or "translate" the complex problems into the recognized ones fast, or time on the quizzes and midterms is never enough for you.
3. Keep in touch with Math every day. Your skills build up accumulatively and gradually. You should not expect any discontinuity (a leap in grade). It is definitely a challenging class. You have to think really hard. Materials might be confusing and frustrating. You might want to break the large topic into small chunks, tackle and familiarize yourself with them day by day.

Mistakes

1. Mechanically plugging figures into templates without the attempt to truly understand their interpretations and other applications. It might work in some easy cases. However, only memorizing templates doesn't prepare you for advanced problems, especially those appearing on the midterms.
2. Doing a lot of practice problem but not correcting myself. When I looked back to the exercises I did, I found I repeated lots of the same mistakes on midterms, but I didn't even have any memory of ever encountering them. Correcting weighs equally as practicing, and you should pay more attention to the mistakes and refer to help as soon as possible.

## Personal Development Exercise

### 5 Algebraic Skills

1. Trigonometric Functions and Identities
2. Trigonometric Functions and Corresponding Domain/Ranges
3. Unit Circle
4. Radians to Degrees, Degrees to Radians
5. Law of Sines, Law of Cosines

### 3 Recommendations to Increase Chance of Success

1. Take enough time out to do the homework and to learn from it because practice makes perfect. This will help on tests and quizzes as well.
2. Make sure your trigonometry foundation is strong because you will use a lot of it in this class, otherwise you will fall behind in trying to reteach yourself both subjects at the same time.
3. Keep your notes organized and clean because when you go back to read them, understanding them easily is important. Make sure your math "language" is correct.

### 2 Study or Personal Mistakes

1. I had a lot of personal issues that kept me from being motivated and persistent this quarter. It was difficult and I did not do my best so it is important to try to find a mental balance and distract yourself enough to succeed.
2. I procrastinated a lot with the most of the work in class which did not help because each lesson was built on top of the previous which made me fall behind even more. It is best to keep at the same pace or ahead if possible in order to succeed.

## Personal Development Exercise

a.) 1. Law of Cosines

2. Areas of 3D shapes

3. Factoring/Simplifying

4. Graphs of inverse trig functions

5. Double angle formulas

b.) 1. Read Prior to Lecture: Reading a section before the lecture is very helpful because it allows for further understanding of the concepts when they are introduced rather than the concepts being brand new.

2. Practice: Doing more than just the assigned homework problems allows for deeper understanding of the concepts. Sometimes the homework assignments alone aren't enough to show full mastery of the concepts.

3. Study Groups: Finding friends or classmates to do homework or study with can be very beneficial to your learning. Study groups allow for a more personal learning experience and better understanding of math concepts.

c.) 1. Falling behind on homework assignments: For a few of the sections, I waited too long on starting the homework. This caused me to start falling behind once new sections were assigned for homework.

2. Lack of sleep: There were some days that I did not balance my assignments well, which led me to stay up to work on them. This led to not being able to get enough sleep for the quizzes or exams the following morning.

• **5 skills**

1. The forms of inverse trigonometric functions and the shape of graph.
2. The derivative of trigonometric functions.
3. The way to find the least common multiple by using special kind of formula.
4. The way to solve the absolute functions.
5. The domain and the range of inverse trigonometric functions.

• **recommendations**

1. Don't hesitate to do all of the problems on the textbooks. If you really want to improve your math skills and get a good grade on this class, you definitely should do most of all exercises on the textbooks although you will do at least tentative homework from the lists. Especially in calculus, one of the most important things is the amount of calculation.

2. You should make study group or partner who is friendly to talk with you and you can ask anything. That's going to be helpful to understand the handout of the class, do the partner quiz, or understand the concept of the problems. In addition to the answer, you can double check your answer.

3. You should spend at least 30 minutes to do the math and review the class everyday. Although you probably can get the high points on the midterm or final test with spending a lot of time just before the last night on the test, that would not help you to improve your mathematical skill honestly. Solving the problems again and again can just the way to improve your calculation skill.

• **study or personal mistakes**

1. You should focus on the first midterm especially because I know the person who dropped this class since he didn't study for midterm well. According to green sheet, if you get high score on the midterm 1, you can miss the other midterms a little bit more. Absolutely, that's help you spiritually, and also your score literally.

2. No matter how much confidences you have mathematically, you must do the review everyday. If you have an overconfidence of mathematic, and you are careless for the problem solving, you going to lose lots of points on some quizzes. If you've ever solve the problem you will see on the class, you should solve completely again and again. That must help you improve your mathematical skills.

## Personal Development

Over the course of the quarter, I have learned a lot. Being in this class, I have learned that you MUST save time outside of class to study material for tests and quizzes. I did not have much time outside school to study since I worked 2 jobs and had 2 other classes, which made me have only the period between my morning class and this class to study. The homework is very important when trying to succeed. Doing all the problems and understanding all of the problems will guarantee a high grade in the class. I did about half the homework per chapter, and I've had times on quizzes where I recognized the problems from homework but do not remember how to do them. For midterms, the midterm review sheet is the same thing as the midterm. My mistake was that I thought that there would not be the same questions on the midterm as the midterm review packets, but I was wrong. They are direct copies, just switching numbers. I always thought there would be other questions, but there never are. So the most important things are study lecture notes, do the homework, and review the midterm reviews.

## Personal Development Exercise

### 5 algebraic skills I cannot master

1. I do not remember a lot of formulas for trigonometry but they are used in this class frequently, so it spends much time to finish the questions.
2. I do not know the graph of different function, so when I study about draw graph and use graph to analyze the function, I cannot really understand or I need use more time to think.
3. I am not good at simplifying but there are a lot of simplifying work in this class, so I cannot get good grades
4. This class requires that you must know the different types of functions, you should can recognize them but I cannot so I cannot solve the questions sometimes.
5. I do not learn the inverse tangent function before, so when I do the derivative about it, I spend much time to think.

### Recommendations

1. You should show the processes of your work in the exams. The reason is that instructor just will give marks for it, and you will lose a lot of marks if you use a shortcut.
2. You should get a tutor at the beginning of the class because he will not only help you check your homework but also help solve your questions that you do not understand in the class.
3. You also should take a free math workshop if you have get a really bad result in the prerequisites test. It is helpful for you to review the knowledge about precalculus or the former math.



## Mistakes

1. I always do not give reasons in the answer because I am not sure about what theorems or definitions it uses. It makes me confused, so I always make mistakes in the quiz.
2. I always forget use chain rule to do the derivative, so I always cannot find the correct answer. Also, it causes that I cannot finish my quiz or all of my work is wrong.

### 5 algebraic skills

1. Remembering what the graphs look like intuitively
2. Multiplication table somehow became rusty
3. Understanding graphs well enough to connect a lot of concepts together
4. Hyperbolic functions
5. Careless mistakes - a LOT of them

### 3 recommendations

1. Make friends with your peers. Establishing a study buddy or a regular routine to the tutorial center will help you maintain motivation to study for math class. Homework will include more complex problems than shown in class, and four (or two) brains can solve it a lot faster than just one.
2. Make sure to listen actively. This class is incredibly fast-paced, and often listening passively or only writing down what the teacher writes on the board will cause you to not understand your notes when you look back later. Write down the thought processes that the professor verbally goes through - they will help you understand the concepts/why you solve the problem in this specific way.
3. Put down your ego. Yes, this class is challenging. Yes, this isn't an easy A. But, you chose this class so you might as well try your \*GD\* best. Professor has high standards out of his students, but he puts in as much work as he expects you to put in. Take control of your life!!

### 2 study mistakes

1. Being too optimistic about how long and tedious studying for math can take: I found it really hard this quarter to be able to stick to the allotted time that I had set aside to finish math homework. There's really no time you can set for yourself to make sure you understand the concepts - it will just take however long it will take.
2. Being able to complete math homework problems/calculations does not equal understanding the concept. In this class, there were a lot of different question types, and I found that if the question was presented differently, I would not be able to understand what was being asked of me. So, make sure you understand the whole concept behind the questions/theorems!

- Logarithmic
- Exponentials
- Some Geometric Theorems
- Limits
- Fractional manipulation

1. Do every single homework problem assigned, not just the Test ones. It will help you understand the concept better. Do not think you have mastered it simply by solving the test questions.
2. Read the examples in the book and do them to help you understand the lecture. Do the examples the day of the lecture to solidify the knowledge. It is important to get concepts down in a timely manner.
3. Seek help if you find yourself struggling with the basics. A strong foundation in this course is key to success in the future. The fundamentals for all of Calculus are solidified here.

- 1) I had health problems like anxiety and did not seek assistance immediately from student resources. This held me back when I could have been doing better.
- 2) I did not manage my time effectively enough due to several personal issues in life. This lack of time management meant that I was not going to be able to complete everything required of me in a timely manner.

## Advise

### 5 Skills:

- Memorizing the unit circle.
- Knowing your trig functions and what things can be converted to.
- Knowing what certain functions graphs look like.
- Logarithmic rules
- Pascals Triangle

### 3 Recommendations:

- Study your prerequisites as they will be used throughout the quarter.
- Do as much homework as you can as the practice can help a lot. Though beware if you are really weak in prerequisites as even if you do the homework, it can not have all the types of problems and it can come back to bite you.
- Go fight the teacher for points on the quizzes as they can be pretty helpful in giving you that little lift.

### 2 Study/Personal Mistakes:

- One personal mistake was not seeking help soon enough. My prerequisites were really weak and I thought that it was going to be okay as I could learn along the way. I was really wrong, even though the professor is pretty nice and wants you to learn the material, It just felt like it was not a good environment for learning at a slow pace as test/quizzes come by really fast. Get a tutor if you think you start struggling.
- Plan ahead, the homework was really difficult for me as I was always behind because of my weak foundation. Doing the homework often took me countless hours and I usually found myself running out of time. Even though it is not mandatory, it basically is if you want to get a decent grade.

## CALC 1A - PERSONAL DEVELOPMENT EXERCISE

[a] 5 algebraic skills from algebra, geometry, precalculus and trigonometry that you (or someone you know in the class) did not master before this class that caused you to do worse than you could have if you had mastery of them

- 1) addition and sum rules for cosine and sine
- 2) graphs of trigonometric functions
- 3) domains of trigonometric functions
- 4) rules concerning the addition and subtraction of logarithms
- 5) values of cosine and sine functions were not memorized properly

[b] 3 recommendations for what a student should do to increase their chances of success, and why each one is helpful

- 1) Come to class early (at least 10 minutes). My class was 10 minutes after the previous class, so right after the previous class finished, I would sign in and get a seat in the front, as well as take my notes out and start copying down the announcements for that day. He begins the lecture at exactly the time your class starts, so having your things ready by then allows an optimum chance of focusing on and understanding the lecture.
- 2) Sit in the front because you have a better view of the board, and can ask questions immediately. Do not zone out because there is important information in the lecture that you may not get from the textbook or homework.
- 3) Read lecture notes after class as well so you can review what you learned that day before going to do the homework because you may forget tricks or techniques that he mentioned. Take note of what he says can be on the final and what key information is important to solving the problem.

[c] 2 study or personal "mistakes" that you (or someone you know) made during this quarter that really hurt your chances of succeeding, and why specifically each one had a negative impact

- 1) I did not utilize office hours to clear my doubts, but instead tried to do the homework and memorize theorems. This was harmful because the quizzes test your understanding of it and not just your memorization of the information.
- 2) I did not memorize the conditions or derivations of theorems, which was hurtful to my understanding of the material. It negatively impacted my quiz scores.