5 algebraic skills from algebra, geometry, precalculus, trigonometry and/or calculus 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.

- Know what the general graphs look like.
- Understand mathematical terminology.
- Remember the Trigonometric Identities (especially the half angles).
- Derivatives should be second nature.
- Understand mathematical notations.

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

- Audit or take Calculus 1A (or even earlier) if you haven't taken math for more than a year. This course required so much material from many previous math courses that you do not have the luxury of reviewing them as you go. Falling behind is inevitable if those skills are not already fresh in your mind.
- Do all the homework, even if you understand the material from lecture and can answer a few problems correctly. Math is all about practice and reinforcing the neural connections through repetition. Each problem you tackle will increase your familiarity of the material and increase of the chance of those skills being recalled during a stressful event (e.g. while taking exams).
- Try to understand how formulas are derived instead of memorizing everything. This will help you in case you forget the actual formula. It will also help you form proofs and tackle ones you haven't seen before.

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.

- Falling behind on the material:
    - If you do not read ahead, or at least keep up with the material, you will definitely have trouble in this course. Every chapter builds on the previous and you will quickly become lost.
- Taking too long on a single exam question:
    - The longer you spend on a question, the less time you have for other questions. Use the provided points per minute statistic provided on the front of the exam. If you're stuck but you keep trying to guess at the problem, you will only cause your brain more stress and make answering other questions even harder.

PERSONAL DEVELOPMENT EXERCISE

[A] 5 skills that I did not master before this class that costs me do worse

- Geometric symmetry: $\cos(-x) = \cos(x)$; $\tan(-x) = -\tan(x)$
- Geometry antiderivative formula.
- Find limit, using L'Hospital rule.
- Area formula, such as circle, trapezoid, sector…
- Remember to add a constant after an antiderivative.

[B] 3 recommendations

- Read the book before class. This step helps following the professor in lecture. Also take a quick scan before test because there are some questions on tests are basically same form as some examples in the book. This really helps.
- Take time to double check the quizzes or tests after finishing. It sometimes helps me recognize some tiny mistakes, like algebraic mistakes, plus or minus sign.
- Go to office hour, tutoring center and have group study when need help. It really helps when you have trouble in homework. Besides, group study helps you think creatively when you work with your friends. You will know different ways to solve the problems.

[C] 2 study or personal mistakes

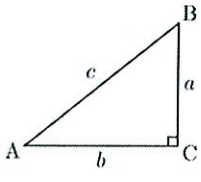
- . Trying to be the first person who complete a test or quiz. I have had this problem since high school. It's like showing off, however it's not worth at all. Instead of finishing early, I should have had time to read my work again.
- Not spending a lot of time for homework. Whenever I do homework, I only glance over real quick, and only do problems that I don't know how to do. This way saves me time, but I don't have chance to do more diverse problems.

[a]

1. If ax^2+bx+c=0, $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = -\frac{b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a}$

2. cos2x=1-2sin^2x=2cos^2x-1=cos^2x-sin^2x

3. ln(a)+ln(b)=ln(ab); ln(a)-ln(b)=ln(a/b)

4. 

Pythagorean Theorem: a^2+b^2=c^2

5. Chain rule: f(g(x))'= f '(g(x))g'(x)

[b]

1. You have to do all of the homework. You will have similar problems that appear in your quizzes or midterms. After all the practice from your homework, you will be more familiar with the questions in the tests so that you can solve them faster.

2. Make sure you ask your professor questions when you are confused. If you are stuck at one problem and just put it aside, you will never know the solution. However, if you ask, you will memorize that kind of problem better.

3. Try to be active in class instead of writing everything down. It is not a writing class, and your professor needs your participation. If you think actively in class, you will understand better.

[c]

1. Read the textbook. At the beginning of the quarter, I didn't read the book. So I felt it was a little bit hard to catch up in the class. After I read the book before every class, I felt that I could even think ahead.

2. Don't forget to add a constant every time you do the indefinite antiderivative. I lost many points in the tests because of this. Always keep it in mind, and then you will gradually form a habit and won't forget "C".

Personal Development Exercise

In order to succeed in Math 1B it is necessary to be organized and motivated. You must always complete the homework assignments before the quiz and also know what days the quizzes will be held on. I recommend obtaining access to the solutions manual for the textbook used in this class, so you may check your work from the homework. It is also helpful being able to see the steps taken. However, it is mostly helpful in the begenning of the quarter. In the second half of the quarter, the only key to success is basically practice. Solving integrals is a skill obtained over time, since it requires pattern matching. I also recognize the importance of entering this class already knowing (by heart) the derivatives of regular and inverse trig/hyperbolic functions, as well as their antiderivatives. Also, it is important to use the resources available to you when help is required. The Math Tutorial Center and Professor L.'s Office Hours are the most readily available.

Math 1B

Instructor: Bert Lo

December 6, 2015

Personal Development Exercise

I started math in De Anza college from math 42, and I think math 42 and 1A are quite easy for me. However, in precalculus, I had some hard time in learning geometry. I barely remember what the major problem it is, but it did cost me so much time to solve the problem. And in this quarter, I learned so many stuffs in section 6 Applications of integration. Finding areas between curves and volumes by Cylindrical shells are all about geometry, sometimes I could not find the right way to use shell or disk method to find the volumes, so I studied it a lot and practice for lots of problem in the homework. At that time I thought if I could solve this problem so well then I believe I could have done better in this section. However, the professor gave us the clear lectures and lots of practice which made me understand better, even though I think the math 1B is hard. The other problem is trigonometric integrals, I sometimes spent so much time on finding u-substitution or other methods to antiderivative it, but I still couldn't get the correct answer. However, I think the professor Lo is the best math professor ever because he could make me really understand the information better and not just memorize it. So now I could solve the trigonometric integrals correctly.

I have some recommendations for the future students who plan to take this class. Apparently, the first one I think is to do the homework or practice right after the class ends because it can make you review the information you just learn and

cement your memory to memorize the methods professor teach you. It also can help you do better in the every week quiz and you can have less problem to solve before the preparation of the exam. Of course you can accumulate all your problems and find professor's office hour to go ask some questions. And the other recommendations is not to use calculator when you are doing your homework because it can practice your calculative skills and it is also not allowed to use in the quiz or exam. What's more, you need to focus on the class and not to skip the class because the lectures are extremely clear that make you understand the information better and easier for you to finish the homework.

The first personal mistake for me was that I forgot to watch the clock during the first quiz, and I wanted to make sure every problem I solved was correct, as a result that I didn't finish the quiz when professor called time up. I felt so regretful that I tried to do as fast as I can in the following quizzes and exams. I think we also need to arrange our time properly when doing quiz or exam. That's another skill can increase our chances of success. There was one study we should know is that we should have a clear logic behind what steps we take in solving a problem. Because when you get the right answer doesn't mean your logic behind it is right. In a word, learn from your mistakes, stay focus, improve yourself, you will be doing good in this math 1B class. Anyways, thank you very much for teaching this class. Have a wonderful Christmas.

Personal Development Exercise

1. -Remember to redistribute a negative that you've taken out
- Order of operations is always in effect, especially parenthesis when squaring
- Can't separate denominator, for example 1/x+6 is not 1/x + 1/6
- In indefinite integrals remember that it is always +C
- A number to a negative exponent is the same thing as 1 over that number to the positive negative exponent, the answer is not DNE

2. - Review and understand all trigonometric identities, this is includes sum and difference formulas, double-angle formulas, and half angle formulas. It shows up in every section so don't try and memorize it before every quiz or test. It's in your best interest to learn it on demand, because if you don't, each time you learn a new concept, you'll also have to continuously review these identities.
- Do more homework than assigned even if it's time consuming. There's a lot on the quiz and midterms that aren't on the homework. Each night, practice concepts you've already learned again to keep them fresh in your brain and continue to practice what you have learned on the following days.
- Ask questions when you feel even the slightest lost. Either to the professor or a tutor, don't wait until you're multiple concepts/ideas behind to realize you need help. This does not mean ask without trying because then on tests/quizzes you won't know how to do problems on your own.

3. - Cramming the night before doesn't work. In a test environment, you're brain is worried and doesn't seem to work like it did when you were doing homework. You need to give your brain enough time and practice for it to see a problem and understand how to do it quickly.
- Don't skip word problems on homework because that is where your understanding of concepts will be tested. It seems like you don't need it, but it will appear on tests or quizzes at least once. In order to do well on tests, you must understand logic and reasoning behind each topic you're learning.

The following are five skills that I should have mastered in previous classes that would have saved me a lot of time and errors in Math 1B:

1). Completing the square (I totally ignored this because I though I would never use it again)
2). How to find the equation of a graph (parabola, circle, ellipse, etc)
3). Derivative of trigonometric functions (at least sin, cos and tan)
4). How to draw trigonometric functions (knowing the periods & asymptotes)
5). Trigonometric identities and how to manipulate them to get what you want.

To succeed in this class, first, never skip similar questions on the homework. It's a misconception that just because you know how to do one type of problem, you can skip a similar one, but actually, practicing each and every is crucial to your problem solving skills. Secondly, don't forget about previous chapters. Later chapters in Math 1B depends greatly on the preceding chapters, if you can't master the initial chapters, you are going to waste a lot of time. Last but not the least; please go to the group tutoring (if it's offered) or to the tutoring center **regularly**. You're not going to cut it if you just seek help right before a quiz/midterm.

The biggest mistake I made this quarter is not managing my time properly. I had a lot going on this quarter and I could not dedicate at least 2 hours a day on this class. I had to cram in 2/3 days for a quiz and it affected my grades badly. I realized that I only did well on quizzes/midterm that I did not cram and spent days practicing. Another thing that impacted my grade was stressing out over grades. This caused me to have anxiety while taking tests which results in making silly mistakes that I could have prevented if I had a cool head. I spent more time stressing out over my grade than actually studying the material and this affected my grade badly.

[a]

The five math skills that I think are necessary to succeed in math 1b are: Know how to visualize a rough sketch of a graph. This will help when finding areas and volumes a lot. Remembering all of your derivatives and anti-derivatives will help a lot when it comes to recognizing things you can do to solve an integral. Remembering all of your trig functions, their identities, and properties can help when solving a lot of problems. Having a strong foundation in algebra is very important too. I have caught myself making plenty of algebra mistakes that will throw off the whole problem. The last one I would say is understanding the geometric concepts of area, so when learning about integration, it will seem more intuitive.

[b]

I would look at the pre-rec packet as soon as possible, and drill any of the concepts that you find yourself rusty on. This will allow a smooth transition into the new content. Attending lecture is very helpful, because you see examples done, which will allow for your intuition to build. Reading the book is a necessity. The lecture is helpful, but it will not make you know the material 100%. If you do not read the book, you will not know the material inside and out.

[c]

Sometimes I would not grade my quiz before a midterm, which would not allow me to really observe my mistakes. My philosophy was to just study for the midterm, but then I ended up making similar mistakes on the quiz and midterm. Staying current with the material that is lectured is also very important. I would catch myself neglecting new material until after the midterm that did not cover the new content. This caused me to rush through the new content, leaving holes in some of the material.

Personal Development Exercise

- 5 algebraic skills from algebra, geometry, pre-calculus, trigonometry and/or calculus that I did not master before this class that caused me to do worse than I could have if I had mastery of them:
  - Area of the trapezoid.
  - Trigonometric identities.
  - Linear approximation.
  - Anti-derivative.
  - Sigma notation.

- 3 recommendations for what a student should do to increase their chances of success:
  - Don't forget to do the home works that are assigned every week, even when they are not graded. You just can't do well on the quizzes and midterms without doing the home works.
  - Always spend extra time to review before quizzes and midterm, don't ever feel that you have had enough studies and that you are ready.
  - Instead of just copying down the notes, try to understand the concept as much as possible, so that when you review the notes, you'll get a better understanding of the concept that you are studying.

- 2 study or personal "mistakes" that I made during this quarter that really hurt my chances of succeeding:
  - Sometimes when I feel that I almost completely understand the lecture, I tend to skip doing the home works for that week, and it has caused me to do really bad on my quiz.
  - Before my first midterm, I only study my past quizzes and forgot to study my homework assignments. I ended up having to skip some of the problems in the midterm because they were not on the quiz, but they were in the homework assignments.

Part A:

1) Memorize the unit circle especially in first quadrant; theta, cos theta, sin theta, tan theta, and how to solve for theta using inverse rules - ie; arctan x= theta = tan theta = x.

2) Completing the square as an expression as opposed to completing the square on either side of an equation (as this may cause simple errors if you are only used to doing it as an equation).

3) Understand how graphs of functions are shaped and move- ie; inverse trig, sin2x, 2sinx, sin2x, cos2x, etc. How to calc intersects by hand, and how graphs of f(x), f '(x), f "(x) are related just by looking at their graphs.

4) Squeeze theorem.

5) Even and odd trig identities/hyperbolic identities and testing functions for symmetry.

Part B:

1) Make a dedicated page for each chapter listing all formulas and strategies used to solve the homework questions. There are many homework questions but each chapter tends to have only a few different formulas/strategies used to solve each type of question. Creating a dedicated note page for each chapter will help you from becoming overwhelmed and confused. It will also speed up time reviewing for quizzes and tests.

2) Take breaks regularly when studying at home. There is a lot of time required to complete all assignments. This means a lot of sitting. Getting up and moving around during breaks and/or exercising will help reduce wasted time due to study fatigue.

3) Plan on studying a lot between midterm 2 and midterm 3. All sections covered in Chapter 7 are important to understand and there is a lot of material presented so try not to fall behind. Practicing problems in Chapter 7.5 (Strategies for Integration) until you can easily recognize how to approach each type of problem will help a lot.

Part C:

1) Get good sleep before quiz/test days. I tend to stay up too late reviewing the night before tests. It is more helpful to review material the next day before class if possible so it is fresh in your mind.

2) Don't spend too much time trying to solve the homework questions or concepts you are stuck on. Write your questions down and move on. Complete as many as you can then go back and try again. If you still can't solve them then organize the questions about assignments and concepts that you can either ask at office hours, in group tutoring if available, or in the tutorial center. It is also important to ask questions about mistakes on quizzes during office hours. This is not only helpful in understanding your mistakes but you will more than likely get several partial credit points back.

Thursday, December 4th, 2015

Math 1B Personal Development

5 skills that I did not master before this class (if I had mastered them, I could have done better):

- Fast in-head calculation: slow algebraic calculation costs me some time during tests and quiz. Time is valuable during tests, if I can save those minutes by faster calculation, I can have more time to check my answers
- Trigonometric circle: if I can remember the patterns of the trigonometric circle, I can save a lot of time trying to figure out some of the value like sine or cosine of 30, 60 degree, etc. If I could remember the patterns, my answer would have been more accurate
- Graph recognition: I was not able to tell which graph resemble which function (logarithm, exponential, parabolic…) and therefore it took me longer time to do problem related to graphs (revolution around axis, area under curve…)
- Organizing scratch paper: this is very important, I was unorganized when writing on scratch paper and then it took me a while to understand my own work because I wrote all over the place.
- Polynomial operation: I was not very confident in polynomial multiplication and division, which is a very important skill needed for calculus. My work would have been more accurate if I could perform this skills adeptly and quickly

3 recommendations:

- Complete homework and redo them in different ways: being able to do the problem different ways will make it more likely to recognize the patterns and therefore it make you more clever in choosing which method is the most efficient
- Finish tests 5-10 minutes early: this is to avoid rushing at the end (which could end up with wrong answers). This time should be used to double check the answer
- Go to office hour and tutor: it is useful to get help from different sources because they can see the problem from different perspective. This is very helpful when you are stuck on a problem and do not know how to approach the next step

2 mistakes that lower chance of success in this class:

- Underestimate the complexity of integration by part: the concept of integration by part is simple, and some students may think that it is easy, but it in fact can be very complicated. Even when you are familiar with integration by part, you can be stuck in a simple problem. I suggest recognizing the patterns rather than just knowing how to do the problems
- Skip examples in the book: some students tend to skip those examples but in fact those problems are very fundamental, easy to understand, and helpful to know because many complex problems can be built upon those easy examples.

[a] 5 algebraic skills

① half angle formula

$\sin(\frac{u}{2}) = \sqrt{\frac{1-\cos u}{2}}$, $\cos(\frac{u}{2}) = \sqrt{\frac{1+\cos u}{2}}$, $\tan(\frac{u}{2}) = \sqrt{\frac{1-\cos u}{1+\cos u}}$

② Laws of exponents

$e^{x+y} = e^x \cdot e^y$, $e^{x-y} = \frac{e^x}{e^y}$, $(e^x)^c = e^{cx}$

③ natural log rules

$\ln a + \ln b = \ln ab$, $\ln a - \ln b = \ln \frac{a}{b}$, $\ln a^k = k \ln a$

$\ln e = 1$

④ chain rule

$f(g(x))' = f'(g(x))\, g'(x)$

ex) $y = \sqrt{\sin(5x)}$

$y' = \frac{1}{2}\sin(5x)^{-\frac{1}{2}} \times \sin(5x)'$

$= \frac{1}{2}\sin(5x)^{-\frac{1}{2}} \times \cos(5x) \times (5x)'$

$= \frac{5\cos 5x}{2\sqrt{\sin 5x}}$

⑤ Product and Sum Formulas

$\cos a \cos b = \frac{1}{2}(\cos(a+b) + \cos(a-b))$

$\sin a \sin b = \frac{1}{2}(\cos(a-b) - \cos(a+b))$

$\sin a \cos b = \frac{1}{2}(\sin(a+b) + \sin(a-b))$

$\cos a \sin b = \frac{1}{2}(\sin(a+b) - \sin(a-b))$

[c] 2 study or personal "mistake"

1. I should listen professor's explain rather than writing the lecture. I cannot do English well, so I have the problem listening and understanding professor's explain clearly. While this quarter, I focused the writing the lecture rather than listening because I thought I could not understand when he said although I made an effort to listen. However, it was problem. When I read the note that I wrote down, I could not understand completely although I wrote down all of lecture's content. As a result, I needed more time to understand it.

2. I should get great grade on the first and second quizzes. Since I did not get great grade on the first and second quizzes, I had great pressure that I had to get perfect score on the all of rest quiz and test for getting 'A' grade. However, I could not get perfect score because I made the mistake. The pressure disturbed me so much. AS a result, I could not see the mistakes when I was taking quiz or test, then it made my score lower and lower. That's reason why the first quiz or test are very important. If I got great grade on the first quiz, I would not feel pressure as now; as a result, I might be better than now.

[B] 3 recommendations

1. Before going to class, reading the chapters that you will learn at least once. When we take new information or listen new info, we need time for understanding. Also, people usually cannot get it perfectly at once. However, if you study before, you can get more than other who do not read if before and you can learn more in class since you know what professor will teach.

2. Solve all problems on the book. Basically, math has a lot of types of problems. If you are super genius like Einstein, you may not need do it, but if you are not, you need to solve various questions for solving any problems. If you do not because you believe you can do, you cannot solve when you meet new problem. So, solve the question as possible as you can.

3. Figure out the mistakes that you made after taking quiz or test. Usually, people repeat to make same mistake. So, if you do not figure out the mistakes and understand completely about the mistakes, you will do it again and again on tests.

Personal Development Exercise

a) 5 algebraic skills to remember:
   1) Trigonometric Identities
   2) Unit circle
   3) Areas of shapes
   4) Quadratic Equation
   5) Completing the square

b) 3 recommendations:
   1) Do your homework, because it gives you good practice of the material that you need to have in order to be able to be ready for the variety of possible questions on upcoming tests. The teacher sometimes gives questions with very difficult numbers while the textbook normally gives out whole numbers. If you have practiced enough, you should be confident with your answers even if they do not look nice.
   2) Memorize important formulas and shortcuts because they will make the work much easier in the end and they will likely be used in future math classes. For example, integrating sec(x)^3 takes a few minutes to do and it will show up often at a point during the course so memorizing the answer to it would make the work much easier. It may seem like a waste of time because it is too long, but having to redo that during a test will cost you some time and slow you down.
   3) Focus on understanding the teacher's notes instead of copying it all down. Chances are there will be similar examples in the textbook but the teacher's explanations are very thorough and help you understand the concepts easier. Make sure to write down the notes of the teacher's shortcuts and questions that seem difficult for you to answer so you can look at them later on.

c) 2 study or personal mistakes:
   1) I sometimes procrastinated with studying and did not get enough practice with the material costing me a lower grade on my test than what I could have gotten. Due to this, I would get too overwhelmed and not be able to spend so many hours in a few days to understand all of the material causing me to get distracted. I should have studied at least once a week even if it was just reading a section.
   2) There were some sections where I had a very difficult time on even with studying and the teacher's notes. I knew there was tutoring available but did not take it because I thought I could understand on my own with more time. Taking advantage of tutoring would have been a big help because a one on one discussion would have made my problems easier.