Some Suggestions on How to Study Mathematics

- Go to class and recitation. Always!

- Go to class and recitation and take notes. The notes you produce will provide a written record of what your instructor believes to be the most important points of the course. Your notes will provide additional examples that will be helpful as you solve problems on homework. Writing notes will help focus your attention on the mathematics being presented in class.

- Go to class when exams and written assignments are returned. Be sure to collect every assignment. Review mistakes in your work so that you will be less likely to repeat the mistake on the next assignment.

- Read the textbook before you go to class. While you may not understand every detail after reading a section in the text, you will be familiar with the main ideas and class will help to deepen your understanding.

- Write careful and complete solutions to each homework problem and keep these solutions in a notebook. We will not, in general, grade your solutions. Your solutions will be useful when you review for exams. Your solutions will be helpful when you seek assistance on a problem and need to explain how you have approached the problem.
  In your work, your goal is not just to arrive at a correct answer but also to explain your reasoning in order to convince the reader that you understand how to solve the problem and that your solution is correct.

- Form a study group. After you go to class, work on homework with fellow students. Make sure that you are able to answer every question. After you have answered every question, make sure that you understand why your answers are correct. Discuss your reasoning with your fellow students and see if others have a better approach to solving a problem.

- Attempt homework problems immediately after material is covered in class. Mark problems that you find difficult and look for explanations for these problems. You may obtain assistance in Mathskeller, the Study, in recitation, in office hours of your teaching assistant or lecturer, in your study group, and by sending e-mail to your TA from mathclass.org.
  The Study is located in the third floor of the Commons in the Kirwan-Blanding Dormitory Complex and provides drop-in tutoring in a number of subjects. The study is open in the evenings from Sunday to Thursday. Visit `http://www.uky.edu/UGS/study` for more information.
  The Mathskeller is located in the basement of the Classroom building and is open from 9 to 5 Monday to Friday. Instructors in MA 113 will hold some of their office hours in Mathskeller. For a schedule visit `www.mathskeller.org`. In addition, assistance with `mathclass.org` will be available and students may print out their assignments from `www.mathclass.org` in the Mathskeller.

- Before each exam, be sure to review carefully every item on the review homework assignments.

- Take a practice exam and do so in an exam-like situation (by yourself with no help except a calculator, in a quiet environment, and with 2 hours of time). Exams from past semesters are available at the site `http://www.ms.uky.edu/~ma113/exams/`. Note that there may be small changes in the syllabus from semester to semester. Compare your solution with the answer key and check both your answer and your reasoning for correctness and completeness.

- Work problems. Work more problems. Many students choose to work additional problems above the required assignments. The following sources of additional problems are available:
  (1) The textbook (see the course calendar for optional homework).
  (2) The common version of web homework problems.
  (3) Additional versions of your web homework. Choose your favorite number to use as the version number at `mathclass.org` and retrieve that homework set.

- Did we mention that you should go to class?

Some common errors

The following errors are commonly found in mathematics homework and exams. Please try to avoid these mistakes. When grading papers, the three letter abbreviations may be used to indicate these errors.

- EQN. Misuse of the equal sign. When we write the equal sign, $=$, the quantities appearing on either side should be equal. We have often seen students write something like $x^2 = 2x$, when they mean $\frac{d}{dx}x^2 = 2x$.

- ALG. Mistakes in algebra. It is not true that $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$. Try $a = b = 1$. It is also not correct to cancel b^2 to obtain $\frac{a+b^2}{b^2} = a$.

- EXP. Incomplete explanations. Your goal in working a problem in mathematics is not just to arrive at a correct answer, but to also show that you understand why the answer is true. In general, your explanations should be written out in complete sentences. Occasionally, students will find a value of an integral or limit by using their calculator. Such answers will generally not receive credit for lack of explanation.

- UNI. Missing or incorrect units. In applied problems, one should give the units for the answer. Thus the velocity of a wombat might be 10 meters/second or 1000 centimeters/second, but never 10.

- AXE. Label your axes. When drawing a graph, you should give the coordinate for each axis and label a few tick-marks on each axis.