

Doing Your Homework

Linear Algebra, Math 52, Brown University, Spring 2006, Instructor Stange

Doing mathematics homework involves a set of specific skills. The first skill is devotion. Since homework is the single best way to cement your understanding of the material in the course, I expect you to **do it diligently and do it all**. For our part, we will work hard to pick worthwhile problems instead of overwhelming you with volume. Below are some notes and strategies.

1. Foremost, **do two copies of your homework**. The first is where you work it out, and the second is where you write it up. Part of the skill set we are developing in this course (and **part of your grade**) is **mathematical writing**, so take the writeup seriously. In your writeup, *include english sentences* indicating which theorems or definitions you are using, and explain your reasoning. Disorganised homework angers your grader, and angry graders are harsh graders. Unexplained solutions will be graded as if incorrect. Never write down guesses – understand everything you write. If you are having trouble explaining your work, and find yourself just blindly mimicking textbook examples without knowing why, *get extra help*.

2. Before starting your homework, **review the section of the textbook we've been covering**, make sure your trusty Definitions and Theorems ("Facts" in the text) are laid out clearly, and take a glance back at the examples we've done.

3. When reading a problem, **make a mental list of the terms, ideas and strategies that might be relevant**. *Write down clearly what you need to know and what you already have. Think of ways you've bridged similar gaps in the past*, even if the problem is phrased in a novel way. Most of the tools used to bridge such a gap are Theorems we've covered recently.

4. If you are having trouble with one problem, **find similar but easier problems** in the problem section of the appropriate chapter, and do a few. Choose ones with the answer in the back, and once you feel confident, go back to the one that was giving you trouble. Often you will find you have new understanding.

5. Don't erase when you get stuck; you may want it later. And as soon as you successfully solve a problem, neatly **write up your final copy right away**, before you lose track of it. If you don't, you'll go back later and suddenly realise what it's like to be a grader faced with a messy solution.

6. **Doing homework with friends can be helpful**, since explaining solutions is good practice. When explaining, try to lead by the Socratic method. **However**, if you find that you receive more explanations than you give, work by yourself before meeting. Remember that homework is preparing you for tests, *which you must do alone*. And of course, **always write up the solution by yourself and in your own words**.

7. If you are having trouble solving problems, perhaps you should **work on problem solving strategies**. Advice on this is available at the course website, at MRC, and in office hours.

8. Working on your homework sets at the **Mathematics Resource Center (MRC)** can be a good way of getting extra help. Information on MRC is available at <http://www.math.brown.edu/mrc/>. Other places for extra help are listed at the course website, <http://www.math.brown.edu/~stange/Ma52/>.

9. **STAPLE YOUR HOMEWORK**. You can buy a lifetime supply of staples at – where else? – *Staples* for under a dollar. Yes, the lifetime friendship of your grader is that cheap. Please also write your name clearly at the top, and keep the problems in the correct order (indicating any that you skipped).