Graded Homework Guidelines

You will submit a homework assignment, including problems and proofs from the textbook as well as other problems/proofs and occasional exploration projects, approximately every two weeks. The homework is intended to evaluate your understanding of important course concepts, your ability to develop mathematical arguments, and your ability to communicate mathematical ideas clearly.

General Guidelines:

- *Write a clear and valid argument.* Of course, this is at the heart of mathematical writing!! Here are some questions to ask yourself to help you evaluate this:
    - What is the logical structure of your proof /example/calculation? Is it clear from what you have written?
    - How have you used the assumptions/definitions/set-up given in the problem? What other results or definitions have you used? Is it clear to the reader how and when you have used them?
    - Have you included enough detail? Remember that your goal is to write something that will be understandable to a fellow classmate. (For example, it would be appropriate to assume that a fellow student could carry out an arithmetic calculation on his/her own, so you wouldn't need to provide the details on this. But a fellow student might not recognize why a particular calculation verifies a general property, so you would want to explain this.)
    - Have you included too much? Are there any parts of your writing that don't actually help you prove your result? Are there any parts that could be presented more concisely?
    - Have you used standard notation correctly and defined any new notation?
- *Use proper English*. Homework assignments should be polished writing, akin to a paper, and so demand more formal writing than in-class notes or tests. Use complete sentences, proper grammar, and paragraphs.
- *Balance written English with mathematical symbols*. Sometimes the use of mathematical symbols helps to make your argument more clear and sometimes it creates an extra mental burden for the reader. Here's the standard approach in formal mathematical writing:
    - Although there are short-hand symbols for quantifiers and logical connectives ($\therefore, \exists, \forall, \Rightarrow, \Leftrightarrow$), these ideas are written out (therefore, there exists, for all, if…then…, if and only if) in formal writing.
    - Symbols for calculations (+, -) and sets (defining a set, showing set containment, etc) are appropriate for formal writing.
    - Start new sentences with words rather than symbols. A symbol at the beginning of a sentence can be hard to read.
    - Set off long calculations on their own lines, but make sure the calculation is connected to what comes before or after. (Since an equation is really its own sentence, it's also good practice to begin an equation with at least a

few words of text. Sometimes it's enough to say, "Therefore,.." and sometimes a longer explanation is necessary.)

- *Write for the target audience*. When writing up work for this class, write as if for a fellow student. This should guide what kind of background knowledge you can assume as well as the level of detail you should include.
- *The work you submit should be your own.* You are welcome to collaborate with other students and to discuss your work with me, but you should have made substantial contributions to any collaborative solutions, you should fully understand the work you submit, and you should present your thinking in your own words.
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Grading: Individual homework problems will be evaluated as follows:

- ++ (5 pts)
  - The solution is completely correct or has only minimal errors.
  - The solution is presented clearly, with easy-to-follow explanations and polished writing.
- ✓+ (4 pts):
  - The solution is generally correct but contains a significant error, or insufficient or confusing explanation is provided.
  - The solution is correct but does not follow the conventions of good mathematical writing.
- ✓ (3 points)
  - The solution strategy is appropriate for the problem, and the solution demonstrates some progress; but the solution contains multiple errors.
  - The explanation contains significant gaps or errors.
- ✓- (≤ 2 pts)
  - The solution uses an inappropriate approach, or very little work is shown.
  - The explanation is non-sensical.
  - The solution cannot be read due to messiness or disorganization.

Homework sets should be typed or neatly written, stapled, and in order. Late homework will not be accepted.