

MATH 400: Homework #12
[Optional to submit but not optional to work on]

Only the ‘Submission Problems’ listed below are due Friday, 12/1, before 10am, via a PDF file uploaded to the Homework#12 under Assignments in the Blackboard course page.

This HW score will be used to replace any lower HW score from previous 11 HWs.

You are allowed to discuss the homework problems with no one except your classmates, the TA, and the instructor. However, the solutions should be written by you and you alone in your own words. **If you discussed HW problems with a classmate or TA, you have to write their name at the top of the HW submission as a collaborator.** Any incident of plagiarism/ cheating (from a person or from any online resource) will be strictly dealt with.

Re-read the [“HW Discussion and Solution Rules”](#) and [“‘Why and How’ of Homework”](#) sections of the course information sheet for some important advice on the HWs for this course.

All problems require explicit and detailed explanations. Solutions should be written clearly, legibly, and concisely, and will be graded for both mathematical correctness and presentation. Points will be deducted for sloppiness, incoherent or insufficient explanation, or for lack of supporting rationale.

Always remember that homework is NOT meant to be an examination, it is meant to assist in your learning and development. If you need help with any HW problem, don’t hesitate to ask me. You are encouraged to ask questions through the *Campuswire Discussion Forums*, during my *Office Hours*, during the *TA office hours*, or through *Email to me*.

PART I: Practice Problems

1. Try all the Discussion/ Review problems as you review the material for this week.
2. Make your own summary of this week’s topics/ concepts/ properties: definitions, alternate forms of the definition based on theorems/ discussions, examples and non-examples, methods for showing the property holds or doesn’t hold, useful ideas from examples, HW problems, etc.
3. Pay close attention to and attempt at least the following exercises from the textbook.
Section 7.4: #1, #3, #5, #6, #7, #11 (this is a useful exercise to think about at least once).
Section 7.5: #1, #3, #5, #7, #9 (*Total Variation* of a function is an essential concept in advanced analysis and probability, make a note of it), #10.

PART II: Submission Problems

3. **Submit written solutions to the five problems listed below.**
 - Section 7.3: #7.
 - Section 7.4: #1, #6.
 - Section 7.5: #1, #7.

PART III: Readings, Comments, etc.

4. This is a good point at which you should go back and look over all the *Part III Readings, Comments, etc.* from the first 11 HWs. Make a note of the extracurricular topics that intrigue you, and ask me for recommendations on how to further investigate them.