

Math 339SP, Spring 2022 — Homework 0

Tim Chumley

Due January 28 at 5:00 pm

Instructions. This introductory problem set is partly to get you familiar with the class structure and technological tools. I know it's fast to have homework due right away, so thanks for jumping in! You will submit responses to Problems 7 and 8 below.

Problem 1. Please respond to the [pre-semester survey](#) on Moodle.

Problem 2. Bookmark the [class web page](#) and read the syllabus there.

Problem 3. Read these [guidelines for good mathematical writing](#), written by a math professor at Harvey Mudd.

Problem 4. We will use [Gradescope](#) for homework submissions. If you haven't used it before, you should make an account with your MHC email address and read this [short tutorial](#) on submitting assignments. Your account should be linked to our course automatically but please let me know if it's not.

Problem 5. We will use Piazza as a forum for posting questions and answers related to class material. Please use this [sign-up link](#) for our class.

Problem 6. Download our class [textbook](#). If you have trouble using this official link, take a look at our class Moodle page for another way to get the textbook.

Problem 7. R is a piece of statistical computing software and a programming language that make it easy to write simulations involving probability. Occasionally, it will be useful to use R to check answers, empirically verify theorems, or test a conjecture. RMarkdown is a useful document format that lets us write prose and simulation code and output all in the same document. It also supports writing math in LaTeX, a programming language that is particularly aimed at writing mathematics since it's very easy and fast to type symbols and formulas. It is similar to HTML in the sense that writing is done in a text file with some code that is written in a combination of the R and LaTeX languages. This text file, which we'll refer to as an RMarkdown file, is then compiled by RStudio to produce a nicely formatted pdf document. Some software is needed, and I'm going to suggest that you do each of the following steps.

1. Go to rstudio.mtholyoke.edu and login with your usual credentials for campuses services like email. The RStudio Server is a cloud based R environment. It's easy to set up and use.
2. Alternative to the RStudio Server, you can install software locally on your personal computer. First, you should install [R](#). Second, you should install [RStudio](#), which is a nice interface or environment for writing R code.
3. Try compiling the [RMarkdown template file](#) I've made for you. You can compare it with my [compiled pdf output](#) to make sure yours looks ok. In the RStudio server, upload the file and hit the Knit button. Using your personal computer, the procedure is nearly the same. Open the Markdown file in RStudio and hit the Knit button. Note that when you first Knit the document you'll likely be prompted to install some packages, which you should say yes to.

Please modify the RMarkdown with your name as the author and submit the pdf output in Gradescope.

Problem 8. Write up solutions (you do not need to type them in RMarkdown/LaTeX) to Problems 2 and 3 from the worksheet on day 1 and submit them on Gradescope. I know we might have discussed aspects of these in class, but I want you to write things up for yourself.