Prof. Rall

Description of the Portfolio

The Portfolio for MTH-260 will consist of a number of written assignments and one portfolio project. The project will require some online and library research on a topic specified by me as well as a proof of at least one mathematical result. Each student may submit one draft for review for each of the written assignments and one draft for review of the portfolio project. There will be deadlines for the submissions of these drafts and they must be submitted to the professor according to the guidelines established in this document. The professor will review and critique each submission, make recommendations and will give each draft a provisional grade that is intended to help you understand the current state of your work. The second draft of any written assignment and the second draft of the portfolio project will be the final draft and will be given a final grade. Deadlines for these final drafts will also be specified.

Important Guidelines and Rules for the Written Assignments and Portfolio Project

1. **You may not discuss your work on the portfolio project with anyone except the instructor of the course**. This means that you are not allowed to talk to other students, professors or anyone else about your solutions. Violation of this policy could result in a grade of zero on a given problem or possibly failure of the course.

2. **You may not use any sources to help complete the written assignments other than the textbook unless a specific assignment indicates that another source may be used on that assignment**. This means that you are not allowed to use other individuals, other books or the Internet to find information about the problems unless specifically directed to do so as part of the problem statement. If you think you need some background information or a definition from another source, then ask the instructor for permission. If permission is granted, then you may look up the necessary information and include it with a footnote in your proof.

3. **All drafts must follow the guidelines for mathematical writing that are in the textbook or that we discuss in class**.

4. **The final draft of a written assignment cannot be submitted on the same day as the first draft**. One of the net effects of this rule is that any draft that you submit on the due date for the final draft will be considered the final draft.

5. I will not discuss written assignments or the portfolio project with you after the posted deadlines for submitting the first draft. (See the section on deadlines later in the document.)

Typesetting the Written Assignments and the Portfolio Project

The written assignments and the portfolio project must be completed using the mathematical typesetting program known as LaTeX.

All students in MTH-260 are required to learn to use LaTeX, the professional typesetting software of choice for mathematicians. (This document itself is written in LaTeX.) It takes some modest

effort at first to learn LaTeX, but it is the best option for typesetting mathematics and will be useful throughout your work in future mathematics and science courses (and possibly others). Each written assignment and the portfolio project must be typeset using LaTeX and submitted as a PDF document. (The way to submit these is explained later in this document.) One of the best ways to learn LaTeX is to take a source file created by someone who uses LaTeX and compare that with the PDF it produces. Experimenting by making small changes in the source file will go a long way toward helping you understand how LaTeX works. Go to the "Latex Help" tab on the course homepage to get started and for some helpful documents.

You can of course find lots of help online for various LaTeX commands. There are also a number of excellent books, one of which is *More Math Into LaTeX*, by George Grätzer. There is a copy on the bookshelf in The Principal Pigeonhole. Please do not remove it from that room!

The LaTeX program is available in several different forms for free (or almost free). Prof. Robert Talbert of the Grand Valley State University Mathematics Department has developed a sequence of screencasts that explain what LaTeX is and how to get started using it. You can access this informative series here:

https://www.youtube.com/watch?v=cTEfw-jUqAg

I use a LaTeX package called MiKTeX on my PC together with a very nice text editor called WinEdt. MiKTeX is free to download and WinEdt is very reasonable. I think the version I use cost me $39. Another option is to do LaTeX in the cloud for free. One of the common ones is ShareLaTeX. Check out this possibility at https://www.sharelatex.com/.

Submission of the Written Assignments and the Project

Every draft of a written assignment must be submitted to me as a PDF file in the private folder I have created for you in Dropbox. You should soon receive an invitation from me to share a folder with your name. Inside this folder are two folders whose names will indicate their use. One of these is for you to submit a draft, and the other is where I will place your submission after I have reviewed it.

- Make sure the name of your PDF file is of the form:

    (last name)-Assignment-p-Draft-d.pdf,

    For example, if I was submitting the first draft of assignment 3 as a student in this class, the file would be titled

    Rall-Assignment-3-Draft-1.pdf

Grading of Written Assignments

Each written assignment in your portfolio will be graded on a ten point scale. There will be little partial credit because of the opportunity to submit assignments for review, to re-write, and to re-submit. In order to receive full credit for an assignment, your solution must be correct, complete, and written according to the writing guidelines established in the text and in the course with no spelling or grammatical errors. Following is a description of the ten point scale for grading each assignment:

Points	Description
10	The proof or solution is mathematically correct and written according to the guidelines in the text and in the course.
9	The proof or solution is mathematically correct, but there is a minor error (note singular)in writing.
6	Significant mathematical progress has been made towards a proof or solution, but either an argument has one major error or the proof is not written according to the guidelines.
3	There is evidence of having some good ideas for constructing a proof or solution and making an effort to write a formal proof.
0	Little or no progress has been made on the assignment.

The grading scale for the portfolio project will be based on twenty points and will follow the scale given above with all point values multiplied by 2.

Some Anticipated Questions About the Written Assignments

The answers to these questions contain some very important requirements and guidelines for the written assignments.

What other requirements are there for the written assignments?
The write-up for each assignment must be written using complete sentences and according to the writing guidelines specified in the text and in the course. It must be neat, well organized, and easy to read. Proper grammar, proper sentence and paragraph structure, and correct spelling are necessities.

What happens if I submit an incorrect or incomplete solution?
The professor will return your draft in your "Reviewed" folder and indicate if it is ready for your Portfolio or if it needs more work. When you submit an assignment before the last day for review, you are asking the professor, "Is this good enough for my Portfolio?"

Should I wait and submit my first draft for review on the due date?
NO!! Begin working on a written assignment when it is given. As soon as you have a proposed solution for a problem, you should write your solution and submit it in the Dropbox folder for review.

Can I work with someone else or use sources other than the textbook?
The only person you can discuss these assignments with is the instructor for the course and the only resource you may use is the textbook unless there are specific directions in a given assignment. Plagiarism is not acceptable and will not be tolerated. No credit will be given for written assignments in which plagiarism is involved. I reserve the option of imposing additional penalties consistent with the university's policies.

How should I start working on a particular assignment?
Since almost all of the assignments involve proving some statement, I will assume in this answer that the assignment is a proof. Before trying to write a proof, you should make for yourself a clear statement of exactly what it is that can be assumed (the hypotheses) and what is to be proved (the conclusion). Make sure you know the mathematical definition of any term in the hypotheses and the conclusion. If it is appropriate, you might also play around with some specific examples. None of this should be included in the write-up for an assignment but is only suggested as a way to "attack" a problem that requires a proof.

What criteria will be used to judge my proofs?
A proof must be logically and mathematically correct. In addition, it must be written using correct notation and according to the course guidelines as developed in the text and discussed in class.

What are the writing guidelines for writing the solutions of the written assignments?
To receive full credit, the write-up for an assignment must be of collegiate quality and follow the

writing guidelines for this course that are given in the textbook and discussed in the course. This means that, in addition to demonstrating mastery of the subject matter, the solution should be neat and easy to read, well organized, and use proper grammar and spelling.

- You should begin your presentation with a carefully worded statement of the problem using simple declarative sentences. For example, here is a typical textbook problem.

$$\text{Prove that if } n \text{ is an integer and } n^2 \text{ is odd, then } n \text{ is odd.}$$

  If you were writing a solution to this problem as part of one of the written assignments, then you should begin something like the following. You will learn that true statements that can be proved are called theorems, propositions, etc. Therefore, you might begin with

  Proposition: If n is an integer and n^2 is an odd integer, then n is an odd integer.

- All calculations and algebraic manipulations must be clearly shown. By doing so, both you and your professor can follow the process you used to obtain an answer. Without a step-by-step presentation, it may be impossible to understand your solution, or if a mistake is made, it may be impossible to determine where the mistake was made.

- You might start your solution with a short discussion of the strategy that you will use. This is required if you use an indirect method of proof such as a proof by contradiction or the use of the contrapositive statement. In addition, you should conclude any proof with a statement of what has been proven, or minimally, that the proof is now complete.