

Journal of Chelsie Wollett for Fall 2007

Chelsie Wollett

September 17, 2007

1 Week of September 10, 2007

1.1 Received Group Assignment

This week was a bit of an awakening. I was prepared for an easy follow-up of what I did during Spring quarter. Instead, I was paired with a group of three graduate students and told we were going to continue the determinant project they were working on last quarter. I read through the two articles given to me by Dr. Mohlenkamp and was completely lost. I understand the gist of the assignment, but when reading the articles, it is like reading a foreign language. Maybe I just do not understand the vocabulary they use, but I cannot seem to follow while reading. I hope that when we dive into the math portion, I will be able to follow along much better.

2 Week of September 17, 2007

2.1 Some Understanding

This week went so much more smoothly than the last one. During our group session, things started to come together. The idea of the Slater determinant finally has meaning for me. I know why we use it. Now, however, I feel that the other three in my group are ready to go and I am like a ball and chain holding them back. By this time last quarter, my undergraduate group had just about finished our first task. This quarter however, I feel like we have yet to even begin a task. I guess I am a little antsy just to get started with the math.

3 Week of September 24, 2007

3.1 Diving into the Math

During our group meeting we talked about our tasks for the quarter. We are trying to solve general cases for some of the higher level interactions. In order to start us off, we were each to reproduce the proof for the interaction of 4 groups

in a geometric order. I thought this would be a breeze, to find determinants. However, there are definitely tricks that are happening to shorten the finding of the determinants that I am unaware of. Also, just getting the matrix is causing me some problems still.

4 Week of October 1, 2007

4.1 Testing a new Equation

Our group meeting this week had us put together an equation of adding simpler matrix determinants instead of trying to find the determinant of one humongous matrix. It was definitely easier for me to solve these determinants, but firstly: I don't 100% understand the equation given in the article, and secondly: I get a sum of four determinants that I don't see any way to factor or reduce into something simple.

5 Week of October 8, 2007

5.1 A new Algebra?

The task for the week was to retrace our steps and try a new equation that Dr. Mohlenkamp suggested. The formula that I got was a lot smaller and simpler than what is in the paper for the other equation. However, I have no idea where to go from what I have already gotten. Also, I was asked if I wanted to attend a Math Conference for women at the University of Nebraska, Lincoln in February. While there, I have the opportunity to present what has been happening with the research project. This is a little scary right now since I still do not feel like I know what is going on at all times. But it is exciting at the same time to present something I have been working on for two quarters to other mathematicians.

6 Week of October 15, 2007

6.1 Working with Matrices

Using a new paper on multi-linear algebra, we tried to unfold a matrix. Given that A and B were both rank 2, we wanted to see what terms came out that were not a part of the rank one matrix. I was stuck at first, but then figured out where the $A[0]B[1]$ and $A[1]B[0]$ terms came from. But I am still confused as to how the $A[1]B[1]$ and $B[1]A[1]$ terms come from.

7 Week of October 22, 2007

7.1 New Task

This week I was given a new task in addition to the determinants my group is already working on. We were given a paper last week that described the new equations Dr. Mohlenkamp had been talking about for two weeks. However, the proof inside was difficult to understand for all group members. My task became translating the proof in the paper into a more easily understood version for readers. This task also ties into my Nebraska conference because I will most likely be explaining this new algebra and how it works with matrices for my presentation.

8 Week of October 29, 2007

8.1 Wrapping Up

Since it is almost the end of the quarter, everything is being wrapped up. Our four person group split up what we've covered for the quarter and we will be presenting it this Friday morning. Then, we split what has been covered so that Srikanth will be writing a report, and Jyosthna and I will be writing another. At the same time, I have been trying to come up with an abstract and title for my presentation in Nebraska.

9 Week of November 5, 2007

9.1 Presentation

We gave our presentation this week. I thought it was a lot more difficult than last quarter's. Last quarter my group met each week to work things out. During our meeting we were able to decide who would say what, but still help each other come up with what to say. This quarter the group meets with Dr. Mohlenkamp, but we do not get together outside of the meeting. Therefore, a day or two before the presentation we are still trying to email each other to get our slides together. But, we got it to work out, and I felt we did an awesome job of explaining things. Somethings clicked for me finally.

10 Week of November 12, 2007

10.1 Paper

Jyosthna and I put off the paper last week to get the last minute details together for the presentation. This week ended up being an emailing nightmare. She did her portion, and tried to send it to me to read and add my portion. But her tex files kept showing up blank when I tried to open them. Eventually, she sent me

the pdf file, which I read, then hoped that my tex file would open when I sent it to her. It did, but there were errors that needed extra commands sent to be fixed. Our schedules conflicted a lot as well, so when she was able to email me, I was out, and vice versa. Hopefully it all came together well.