Math 126 End of Week 5 Newsletter

UPCOMING ASSIGNMENTS

- *Closing Tue (Nov 3rd)*: 14.1, 14.3 (part 1) HW on **Webassign**
- *Closing Thu (Nov 5th)*: 14.3 (part 2), 14.4 HW on **Webassign**.
- *Open Thu-Sun (4 hrs from when you start):* Reading/Watching Quiz 2 (Ch. 14) on **Canvas**

UPCOMING SCHEDULE:

Friday:	Live-Stream – 14.1/14.3 (intro to surfaces and partial deriv.)	– **Watch 14.1 Before**
Monday:	Live-Stream – 14.3/14.4 (more partial derivatives plus tangent planes)	– **Watch 14.3 Before**
Tuesday:	**Test Prep**, Exam practice, and HW Q & A (on 14.1 and 14.3)	
Wednesday:	Live-Stream – 14.4/14.7 (tangent plane plus critical points)	– **Watch 14.3/14.4 Before**
Thursday:	**Test Prep**, Exam practice, and HW Q & A (on 14.3, 14.4, and starting 14.7)	
Next Friday:	Live-Stream – 14.7 (local max/min and global max/min)	– **Watch 14.7(1)(2) Before**

NEW POSTINGS

1. My summary of all max/min ideas: Calculus 1 facts on page 1 and Calculus 3 facts on page 2, nice to compare.
2. 13.3, 13.4 and 14.1 Review sheet: see the last two pages for worked out examples on domain and level curves
3. Partial Derivatives Basic Review Sheet.
4. More practice with 14.3 partial derivatives. (Good for students that don't know implicit differentiation)
5. Summary of 14.4 and 14.7 with full examples.

OLD EXAMS: As always, at the end of each week, I strongly encourage you to look in the exam archive to practice some exam problems pertaining to the current material. Remember you can look in my exam archive to solutions to most of these, I am really just trying to get you to go to the exam archive a few times over the next week. Also look at recent exams.

For practice with 14.1, 14.3, 14.4 **(partial derivatives and tangent planes)**

Problem 2 and 3a from: https://sites.math.washington.edu/~aloveles/Math126Fall2020/w16m126e2.pdf
Problem 2a from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr13lovelessExII.pdf
Problem 2a from: http://www.math.washington.edu/~m126/midterms/midterm2/m126aut12lovelessExII.pdf
Problem 1b from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr11lovelessExII.pdf
Problem 2 from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr10lovelessExII.pdf

For practice with 14.7 **(critical points and max/min)**

Local Max/Min:
Problem 4 from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr14novikExII.pdf
Problem 3 from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr14taggartExII.pdf
Problem 2b from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr13lovelessExII.pdf
Problem 2 from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr11lovelessExII.pdf
Global Max/Min:
Problem 4 from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr14lovelessExII.pdf
Problem 5 from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr14perkinsExII.pdf
Problem 4a from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr11lovelessExII.pdf
Applied Max/Min:
Problem 4 from: http://www.math.washington.edu/~m126/midterms/midterm2/m126win14bekyelExII.pdf
Problem 4 from: http://www.math.washington.edu/~m126/midterms/midterm2/m126aut12lovelessExII.pdf
Problem 5 from: http://www.math.washington.edu/~m126/midterms/midterm2/m126spr10lovelessExII.pdf

See the next page for more exam advice…

More Exam and Course Advice:

The quarter starts today! Pretend this is day one of the quarter. You have three exams left and can dramatically change your grade. So if things haven't gone well so far, then your personal hit the "reset button". Your performance on exam 1 and exam 2 should not have a negative impact on your performance for exams 3, 4, and 5.

Treat exam questions like essay questions. For example if a questions ask you to do something with a tangent line, then first find the tangent line, make sure to show this on the test. Or if a questions is about max/min, then make sure you show that you can correctly find partial derivatives and set them equal to zero. So there are a TON of things you can show even on a problem where you are confused on how to finish. A student score below 70% on these test cannot be explained away by saying "I made calculation errors", students getting below 70% are making major conceptual errors and you can prevent this by preparing, knowing the main concepts, and treating exam questions like essay questions. You all can do that, no matter what your math background is, so approach exam questions like essay questions.

Practice checking your work. Expect that you will lose -2 points for each calculation error. Sometimes it may be a bigger deduction and sometimes it may be a smaller deduction, that depends on the error, but just assume you will lose -2 points for calculation errors. Don't plan to argue with me about this, instead plan to not make errors, then after you build up these skills when you apply for jobs after leaving my class you can write you are "detail oriented", but this takes practice. Some errors are easier to catch than others. Things that are easy to check should be done right away (if a vector is orthogonal or if the solution you found is actually a solution or if an integral is correct). If you build checking your work into your routine you can avoid the vast majority of errors.

- *Exam 3 will test Chapter 14 which includes* 14.1, 14.3, 14.4, 14.7 partial derivatives related material (basics of surfaces, computing partials, tangent plane, local max/min, global max/min, applied max/min, second derivative test). **It will be vitally important that you get your partial derivatives are right. You'll want to check those twice (three times…)**. You cannot make partial derivative errors, that is important. So practice, practice, practice in 14.3, 14.4, and 14.7 (plus I posted extra practice).
    - Also when you find the critical points in 14.7, you can check to make sure that they all make BOTH partials equal to zero. This is easy to check. This means you will be sure your points are correct (it won't tell you if you forgot some points, but it will tell you if the points you got actually are critical points). So you should never, ever, ever given an incorrect critical point as it is so easy to check. I'll talk about this in 14.7.
    - In my opinion, there are fewer total skills going into exam 3. And you won't need as much time for tedious computations. But the processes and ideas are bigger and the problems have more steps. So you will need to practice, practice, practice to build good routines in order to cut down on errors (and check things you can check).

Points on tests and your overall course grade. A few students have implied to me that it is unfair to lose 1 or 2 points for a calculation error, they claim it is too big a percentage of the grade. Let me address this. Each exam is 16% of your overall grade, so 1 point on a test is 1/30 * 16 = 0.53% of your overall course grade. Meaning if you get one more point on exam 2, for example, then that might change your **final** course grade, for example, from 91% to 91.53%. Likely that would not change a student's grade. So one point on a test is relatively insignificant in this course. I would estimate that at the end of the term the difference between a student that gets a grade of 3.2 and a student that gets a grade of 3.3 is about 3 or 4 points on exams. And the grades of 3.2 and 3.3 are really indistinguishable on a transcript so the subtlety of a few points on one midterm won't be a big difference in overall grade. I know students want to fight for every point and the best way to do that is to treat each exam question like an essay question and to check your work. Understand that students with grades below 2.0 will typically have made many large conceptual errors on tests this term (so many that I can confidently say they are ready to move on past this course). And students with grades between 2.0 and 3.0 will have a mixture of conceptual errors and computation errors that add up over the course of the term, but these students generally have a good sense of the concepts. And students with grades 3.0 to 4.0 will have almost no conceptual errors in their tests and perhaps a few computation errors.

I hope some of this helps. Now you have to put in the time and effort to really get to know these concepts well.

- Dr. Andy Loveless