MATH 141 Calculus 2
Fall 2015
Info on the final (updated December 4)

This document may be updated from time to time in response to student queries (December 3 updates, December 1 updates, November 30 updates, November 26 updates). Please check MyCourses for the latest version (the course webpage may be a little late).

Time: Wednesday 9 December, 2pm

Location: Arthur Currie Gym, Sports Complex, 475 Pine Avenue West. The exact room depends on your last name:

Aaa-Hoc: Main gym, rows 37-45 (shared with two other exams)

Hou-Sam: Studio 1

Sau-Zzz: Studio 2

Duration: 3 hours

If you have a conflict, please speak to Service Point.

The final is out of 100 points. The questions are divided into two parts:

- In Part A (22 points), only your final answers will be scored; there is no partial credit.
- In Part B (78 points), you need to show all of your work and justify your answers to receive full credit.

There are no multiple choice questions.

All questions on the final will be solvable using material from lectures, tutorials, and WebWork. All WebWork questions and examples from class are fair game (subject to the conditions below). However, there may also be questions unlike these, which will require you to think on your feet.

- You will not be required to sketch anything. You will provided with sketches for any area/volume questions, and any parametric/polar questions where a sketch would be helpful. You will be given the list of curves in the sketch, but the curves on the sketch will not be separately identified - you will have to figure out which is which. Also, any intersections will not be labelled; you will have to compute those.
- You will not be asked to solve the questions using a particular method. You may use any mathematically-valid method of your choice, (including material from outside the class, as long as you explain it fully).

Dr. Pang will not comment on the weighting of topics on the final, or the difficulty of the final (e.g. similar to quizzes or to WebWork). The practice final should give you some idea.

You should expect at least half the questions on the final to be graded in a similar way to your most harshly graded quiz.

The lectures on Wednesday 2 December, Friday 4 December and Monday 7 December will be devoted to review, and are optional. Please see the other document for more details.

Dr. Pang's usual office hours are cancelled on the week of the final, but she will host special office hours Tuesday December 8 2-4:40pm. The TAs' regular office hours will continue until Tuesday December 8, they may also offer extra office hours. Keep an eye on the calendar on the course webpage, and on any emails from your TA.

The best way to study for a math exam is to first organise the material onto a "cheat sheet", and then do lots of practice problems. As requested, the review lectures will include a summary for convergence testing and for integration, but it's the process of making these summaries that help you learn the material, much more than reading someone else's summary.

- Some people find it useful to redo WebWork problems they previously had trouble with. There are also suggested problems on the Resources part of the course webpage. (`http://amypang.github.io/141`).
- A practice final, and solutions, is now available from MyCourses and the Exams section of the course webpage (`http://amypang.github.io/141`). The practice final is meant to give you an idea of the format and overall difficulty of the final, but the exact topics tested and the exact difficulty of each question may vary. The actual final has 9 questions, but the same number of part-questions as the practice final.
- There have been some requests for hard problems. Here are some hard integrals from Section 7.5 (same questions in 7th or 8th edition): 7, 33, 37, 39, 45, 55, 63, 71, 73. Unless specifically requested (feel free!), we will probably NOT solve these in review lectures, since answers are in the student solutions manual.
- Past finals aren't necessarily representative of our final, since the syllabus and the style of questions change considerably from semester to semester. However, they may be good preparation psychologically: it may be useful to do integration questions for three hours straight away from your notes, to develop and practise good test-taking strategies. For this purpose, 30 blank copies of the summer 2014 final are available from Dr. Pang's office hours (Monday 30 November, Wednesday 2 December, Friday 4 December, 10-10:40am, BURN 1243), first come first served; Dr. Pang does NOT endorse this final over any other past final (in fact she has only glanced at the questions), but they were the only blank past finals she could acquire. The last question on this final is NOT on our syllabus, even if you plot the curves with a computer, because it involves the intersection of polar curves. However, there are past exam problems involving intersections of polar curves in a simpler way which would be fair game for our final. Blank quizzes from earlier this semester will also be available.

Some advice:

- The final is designed to stretch you. Do not be discouraged if a few of the problems seem hard.
- The final is not short. Do NOT rush, because carelessness in arithmetic or algebraic manipulation can complicate a problem. In particular, in area/volume/arclength problems, it pays to double-check your setup, so you're not trying to solve a much harder integral than the question asked for. If you feel nervous, write out your substitutions instead of doing them in your head. If you feel pushed for time, it may be better to leave out a hard question than to make a poor attempt at all the questions.
- The questions in the final are NOT in order of difficulty. It is recommended that you read all the questions before you start, and choose to first solve questions that are easy for you. This means you should figure out which topics you're good at.
- As always, please present your work coherently. We don't have a lot of time to spend on each paper, and if we can't figure out what you're trying to do, we can't give you partial credit. Also, you need to be able to read your work so that, if you catch a mistake, you can go back and fix it!

Common errors on exams:

- Bad algebra, e.g. $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$.
- Mental substitution errors, e.g. $\int \cos(2x) = \sin(2x)$.
- Differentiating when you want to integrate, and vice versa.
- Copying errors.

What we suspect is the real error behind all these errors: rushing, and studying too late the night before and turning up to the exam like a zombie. If your brain is tired, you won't be able to perform at peak condition and handle the unexpected "think on your feet" questions.

Solutions to the final will be posted on MyCourses a few days after the final (and on the course webpage a few more days later, for technical reasons). There may be the chance to look over your graded final in January; keep an eye on the course webpage, and email Dr. Pang to make an appointment (cy.amy.pang@mcgill.ca; if you hear no response in 24 hours, try amypang@lacim.ca).

We hope that everyone passes this class. If the unfortunate happens, it may be possible to take a supplemental exam in May, depending on your faculty. However, we strongly recommend that you retake the class as opposed to taking the supplemental exam - the supplemental exam counts for 100% of your grade, so you won't be able to take advantage of WebWork and the quizzes. Taking a supplemental exam does NOT remove your failing grade from your transcript - indeed, on your transcript it will look no different from retaking the class. Retaking the class will give you a better chance of obtaining a higher grade than by simply taking the supplemental exam.