

Math 1XX3 Final Exam Info Sheet

The purpose of this handout is to help you study by listing the concepts, definitions, and results that you will need to know for the final exam.

Exam Information. The final exam will be on Wednesday, April 26, 2017 from 9:00AM-11:30AM. The final exam will take place in

LRW (L.R. Wilson Building) B1007

and will be 2.5 hours long. You will *not* be allowed to bring in any notes or use the text book. You will be allowed to use the standard McMaster Calculator (Casio FX-991). You must bring your **Student Card** – you will not be able to write the exam without your student card.

Exam Format. The exam contains 14 questions and is out of 75 points. Approximately 50% of the exam will be on Chapter 14, while the remaining 50% will cover Chapters 9, 10, and 11. The format will be similar to the midterms (a combination of multiple choice and short answer questions).

Material Covered. The exam is cumulative. Below, I have given a breakdown of what you will need to know from each chapter (also see the review sheets from the midterms). Note that when you are learning terms, it is good to think of an example that satisfies that term, and one that does not satisfy that term.

Section 7.4 and Chapter 9. See the review sheet of first midterm. However, there are no questions on models for population growth.

Chapter 10. See the review sheet of the first midterm.

Sections 11.1-11.9. See the review sheet of the second midterm.

Section 11.10. Know how to find the Taylor and Maclaurin series of a given function. There are no questions about Taylor's inequality.

Section 11.11. Know how to approximate a function using Taylor polynomials. You do not need to know about the applications to physics.

Section 14.1. Know what is meant by a function in many variables. Know what we mean by the graph of a function. Know what a level curve is.

Section 14.2. Know what we mean by a limit for a two variable function (Definition 1 on page 904). Know how to compute limits or verify that a limit does not exist. Know what it means for a function to be continuous.

Section 14.3. Know how to compute the partial derivative of a function. Know Clairout's Theorem (page 919). Know how to verify if a function is a solution to a partial differential equation.

Section 14.4. Know how to find the tangent plane of a function near a point (see page 928). Know what it means for a function to be differentiable. You do not need to know about differentials.

Section 14.5. Know how to use the chain rule for a function in many variables. Be able to do implicit differentiation.

Section 14.6. Know what the directional derivative is. Know what a unit vector is. Know what the gradient vector is. Know how to maximize the directional derivative (see page 952). Know the geometric significance of the gradient vector.

Section 14.7. Know what we mean by the local maximum and local minimum value. Know what we mean by a critical point and how to find the critical points. Know what we mean by a saddle point. Know how to use the Second Derivative Test (page 961) to determine if a critical point is a local maximum, a local minimum, or a saddle point. Know what we mean by the absolute maximum and minimum values, and how to find these values (see page 966).

Final Mark. When computing the final mark, I will use the HIGHER of the following two weightings:

Weight 1. (As described in the course handout)

- Maximum among {WebAssign average, Midterm grades, Final Exam grade} = 10%
- Two midterm tests $2 \times 24\% = 48\%$
- Final Examination 42%

Weight 2.

- Maximum among {WebAssign average, Midterm grades, Final Exam grade} = 10%
- Maximum among {Midterm 1, Midterm 2} = 24%
- Final Examination 66%

Additional Notes. I will generally not be available from April 10-14. I plan to be on campus April 17-25 (except weekends), although I may have other meetings. If you want to meet, try dropping by my office or setting up a time to see me.

There will also be a review session; I will post the dates on the class web page once a time and place has been finalized.

If you have questions, please feel free to email me. Good luck!