

Math 290–B01 (Foundations of Mathematics)
Summer 2009

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Course web page: Access from the page <http://math.gmu.edu/coursehomepages.htm>.

Office hours: MW 2:00pm–4:00pm, and by appointment.

Text: D. Smith, M. Eggen, R. St. Andre, *A Transition to Advanced Mathematics* (sixth edition)

Topics: The course will cover Chapters 1–5 in the text.

General Comments:

The main purpose of this course is to teach the student how to write, read, and recognize correct mathematical proofs. The student will also be given an opportunity to learn how to present proofs verbally. Along the way, the student will be introduced to some elementary concepts of advanced mathematics including elementary propositional logic, set theory, relations, functions, and cardinality.

This is a summer course in which we must cover an entire semester's worth of material in about seven weeks. Therefore, the pace of this course is **extremely fast**. If you fall behind at any point in the course, you will very quickly find yourself in serious trouble. Therefore, do your best to stay caught up with the material. You should expect to work **at least 9 hours per week** outside of class in order to master the material in this course.

Grading:

Homework Exercises: Included with this syllabus is a list of homework exercises for the course. Students are expected to keep a homework notebook containing solved homework problems. The notebook will be collected before each exam, checked, and returned afterward. It is essential that you do the homework problems in a timely fashion in order to do well on exams and quizzes. The assigned problems are representative of the test questions. Your homework grade will count for 5% of your final grade.

Midterm Exams: A total of six exams, each lasting 50 minutes, will be given at the beginning of class each Wednesday, from Wednesday, June 10 through Wednesday, July 15. Your best five, exam will be counted (that is, your lowest exam score will be dropped). Your exam average will count for 75% of your final grade. **Because one exam is dropped, makeup exams will not be given under any circumstances whatsoever.**

Final Exam: There will be a **cumulative final exam** given on Monday, July 20, 4:30pm–7:15pm in the same room where we have class. The final exam will count for 20% of your final grade.

The grading scale is as follows, and is based on your correctly rounded semester average. There will be no curve.

A: 90 – 100; B: 80 – < 90; C: 70 – < 80; D: 60 – < 70; F: 0 – < 60

Homework Exercises

Section Exercises

- 1.1 1(a)-(e), 2(a)-(f), 3(a)-(g), 4(a)-(g), 5(a)-(c), 6(a), 6(d), 8(a)-(b), 10(a)-(c)
- 1.2 1(a)-(e), 2(for parts (a)-(e) of 1), 3(a)-(d), 4(a)-(e), 5(a)-(d), 6(a)-(c), 8(a)-(e), 9(a), (c), 12, 13(a)-(e), 14(a)
- 1.3 1(a)-(e), 2(for parts (a)-(e) of 1), 5(a)-(d), 6(a)-(e), 7(a)-(e)
- 1.4 2(b), 3(a)-(c), 5(a)-(b), 6(a)-(c), 7(a)-(e), 8, 9(a)-(b)
- 1.5 2(a)-(c), 3(a)-(d), 4(a), 5(a), 6(a)-(b), 7(a), 9
- 1.6 1(a)-(e), 2(a)-(b), 4, 5(a)-(d), 6(a)-(b), 7(a)-(d)
- 1.7 1(a)-(c), 2(b), 3(a)-(b), 4(a), 5(a)-(b), 6(a), 7(b), 8(a), 9(b), 11(a), 11(c)
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- 2.1 1(a)-(c), 2(for parts (a)-(c) of 1), 3(a)-(e), 4(a)-(e), 5(a)-(b), 6(a)-(c), 7(b)-(d), 8(a)-(b), 9(a)-(e), 13, 16
- 2.2 1(a)-(e), 2(a)-(e), 3(a)-(g), 4(a)-(c), 6(for parts (a)-(e) of 2), 10(a)-(c), 11(a)-(c), 12(a)-(c), 14(a)-(c), 15(a)-(b)
- 2.3 1(a)-(f), 2(a)-(f), 6(a), 8(a)-(b), 10(a), 17(a)-(c)
- 2.4 1(a)-(c), 2(a)-(b), 4(a)-(e), 5(a)-(b), 6(a)-(b), 7(a), 8(a)-(e), 8(m), 8(q), 9(a)-(b)
- 2.5 2, 5(a)-(b), 6(a)-(b), 13(a)-(b)
- 2.6 1(a)-(b), 2(a)-(c), 4(a)-(b), 6(a)-(b), 10, 11(a)-(b), 13, 14, 17
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- 3.1 1(a)-(b), 2, 4(a)-(b), 5, 6(a)-(d), 8(a)-(d), 9(a)-(d), 10(for parts (a)-(d) of 8), 11(a)-(c), 13(a)-(c), 15
- 3.2 1(a)-(e), 2(a)-(d), 4(a)-(e), 5(a)-(c), 6(a)-(b), 7(a)-(d), 8
- 3.3 2(a)-(c), 3, 5, 6(a)-(c), 7, 8(a), 8(c), 14(a)-(b)
- 3.4 1(a)-(c), 2, 4, 5, 6, 10, 11, 13(b), 14, 16(a)-(b)
- 3.5 1, 2(a)-(c), 3(a)-(b), 6, 7, 10, 13
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- 4.1 1(a)-(e), 2(a)-(b), 3(a)-(e), 4(a)-(c), 5(a)-(c), 6(a), 6(c), 7(b), 7(c), 8(a)-(c), 9(a)-(b), 10, 14, 16(b)
- 4.2 1(a)-(e), 3(a)-(d), 6, 7, 12(a)-(c), 13, 14(a)-(d), 15(a)-(c), 16(a)-(b), 18
- 4.3 1(a)-(f), 2(for parts (a)-(f) of 1), 4, 8(a)-(c), 9(a)-(b), 10(a)-(b), 14(a)-(b), 15(a)-(b), 16(a)-(c)
- 4.4 1, 3, 5, 7, 8, 13, (a), 13(c), 15, 18, 21(a)
- 4.5 1(a)-(c), 2(for parts (a)-(c) of 1), 3(a)-(e), 4(a)-(f), 6(a)-(c), 8(a)-(c)
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- 5.1 5(a)-(f), 6, 8, 11(a)-(b), 12, 16, 19
- 5.2 1(a)-(e), 2(c)-(e), 3(a)-(c), 4, 5(a)-(d), 6(a)-(b), 8(a), 11
- 5.3 2, 8(a)-(c), 10, 12, 13(a), 14(a)-(b)
- 5.4 1, 3, 5, 8(a), 8(c), 11, 15
- 5.5 1(a)-(d), 3, 7