

Fall 2017
Math 471 Advanced Analysis 1
Black 201-01, 2:00 - 2:50 MTWTh

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Required Text: Ross, Kenneth A.; Elementary Analysis: The Theory of Calculus, 2nd edition, published by Springer-Verlag

Course Goals: The goal of Math 471 is to approach calculus rigorously. For example, we want to give a proof of the Mean Value Theorem that doesn't rely on a picture. (The picture may inform our thinking, but we don't want to appeal to it.) A major part of that goal is reading proofs **AND** writing your own proofs. In terms of sections of the book, we will start in Chapter 2, and hopefully get to Chapter 5. This means our list of topics will include:

1. Subsequences, limsup, liminf
2. A little metric space topology
3. Continuity
4. Uniform Continuity
5. Limits of Functions
6. Sequences and Series of Functions

1 Grades/Exams/Homework

- Grades

Grades will be calculated using the following weighting system:

Homework: 50%;

Exams: 50% total, broken up as follows: 25% for the mid-term and 25% for the final.

- Homework

You'll get a homework assignment every Tuesday (except the first week!) Homework will consist of three problems: two are standard problems (as you did in 371), and the third is an **in-class** problem. "Standard" problems are worth 10 points and will be due at the beginning of class the following week (so the first two "standard" problems will be due Thursday, September 28), and you may use/ask/talk to whatever/whoever you'd like, as long as you say what resources you used. However, you must write your solutions up in **your own words** to hand in. **DO NOT** wait until the day before homework is due to start working on it.

The in-class problems are to be done collaboratively with the entire class. Solutions to the in-class problems will be presented in class on Wednesday (and possibly Thursday) of the following week. In-class problems are worth 5 points, and you can earn those points in one of two ways: present a solution in-class, or turn in an outline of the problem on the Monday before the homework is due. (That means the first outline will be due on Monday,

September 25.) For a complete outline, you should define all the mathematical terms in the problem, and specify what information is given and what is to be proved.

- Homework Revisions

Standard homework problems will be graded out of 10 points. Graded homework will be returned on Monday, and revisions for the standard homework problems will be due on Wednesday. Revisions can earn you up to two points per problem. Revisions must be on a new sheet of paper, and you must turn in your original graded work together with your revision.

- Exams

There will be two exams: a mid-term and a final. They will be take-home exams, and you'll have a week to work on them. In contrast to the homework, every exam problem is a "standard" problem and I want you to work by yourself on the exams. The mid-term will be handed towards the end of October, and the Final Exam will be handed out on Tuesday, November 28 and due on December 7.

- Expectation for Homework and Exams

Your homework and exams should be written up neatly and legibly, using complete sentences where appropriate. (For example, I don't expect you to write $(a + b)^2 = a^2 + 2ab + b^2$ using complete sentences!) You are encouraged to type your solutions using L^AT_EX. If you want to submit your solutions electronically, you must typeset your solutions - I will not accept scans or pictures of handwritten work to grade! Part of writing proofs is to use correct and proper grammar, spelling, and punctuation. As a result, you will be graded on mechanics, as well as the correctness of your proofs! Comments on these aspects of your homework will be in green, and will be worth at most one point per problem.

2 Disability Support

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with the instructor. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.