

Math 401/501, Fall 2018
Assignment 10 and some notes for the first midterm
NOT COLLECTED

Exercises (do not hand these in, but have them completed prior to November 9):

1. Ross, §18 Exercises: 18.5, 18.6, 18.7, 18.9.
2. Ross, §19 Exercises: 19.1, 19.3, 19.4, 19.5.

Hint for 19.4: If the function was unbounded, then it should be possible to find a sequence $(x_n)_{n=1}^{\infty}$ such that $|f(x_n)| \rightarrow +\infty$ (make sure to justify this). Then use the Bolzano-Weierstrass theorem to show that (x_n) has a convergent, hence Cauchy, subsequence $(x_{n_k})_{k=1}^{\infty}$.

Reading: Ross §19, begin §20.

Some notes concerning the second midterm:

1. The second midterm is on Friday, November 9 in class. **Bring your UNM photo ID.**
2. Prof. Blair will be out of town November 8-November 11, and hence is unlikely to be available for questions on those days. In particular, there will be a substitute proctoring the exam on November 9. Please line up any questions you have for Prof. Blair prior to November 8. Note that the TA, Cairn Overturf will have his usual office hours 12-1 on Tuesday, November 6, and Thursday, November 8. Contact him for other possible availability.
3. The second midterm will cover the following sections from Ross: §9, 10, 11, 12, 14, 15, 17, 18, 19. However, you will need to be very familiar with the basic definitions and properties of sequences, including the ϵ, N definition of convergence, as many of the properties of sequences we have examined since then rely on this definition. To that end, you may need to review §7, 8 in Ross as well. However, in many cases you may be able to rely on product, sum and quotient rules for limits to solve a problem (as in §9).
4. There is no practice exam for the midterm, but recall that there are numerous “on your own” exercises in each assignment. If you haven’t been diligent about them, now is the time to revisit them in detail.
5. There will be student-driven reviews in class on Wednesday, November 7 and in recitation on Tuesday, November 6. You should come prepared to ask any questions you have.
6. Be familiar with both characterizations of continuity: Definition 17.1 and the ϵ, δ criteria in Theorem 17.2.