

Mathematical Analysis Reading for Monday, May 31st

We haven't finished pondering how the proofs of Chapter 8 work. Especially important if you really want to understand the consequences of P13 are the the "three hard theorems," (which in Chapter 8 are re-listed as Theorems 7-1, 7-2, and 7-3, and proven).

After those, the last couple of theorems of the Chapter may seem a bit anticlimactic. For example, the fact that set of all natural numbers is not bounded seemed so "obvious" that I wasn't expecting a proof, nor was I expecting a property of the natural numbers to depend on a property of the real numbers.

Let me slip in one more bit of reading. There is an Appendix to Chapter 8, called "Uniform Continuity." It would round out your understanding of continuous functions to to know what *uniform continuity* is. Read p. 142 through to the boxed definition.

After you finish reading Chapter 8, go on and read Chapter 9, to the boxed definition of *differentiability*, and the *derivative*.

Mathematical Analysis Problem Set 11 for Monday, May 31st

From Chapter 8

Problem 2(a). (This is not meant to be complicated. Just apply the definition of a bound.)

Problem 3(a).

From the Appendix to Chapter 8

Problem 1(a) on p. 144. Also, for what value(s) of a is x^a uniformly continuous?

For In-Class Discussion on Monday, May 31st

Try to understand how you would do the proof outlined in Problem 3(b). Make some drawings like Figures 1, 2, and 3 on p. 133 that show the set B .

Problem 5 is also very good. It is hard to figure out what to do until you look at the hints.