

Math 444 (Cowen) Reading Assignment 2 Due 2:00p, 15 September 2010

Read Chapter 2, Section 5 of Bartle & Sherbert's book; then, send email to ccowen@math.iupui.edu with your answers to the following questions:

1. "Was this section clear?" "Do you have any questions?"
2. For n in \mathbb{N} , let $a_n = \frac{3n-1}{5n+1}$, let $b_n = \frac{6n+1}{7n-1}$, and let $I_n = [a_n, b_n]$.
 - (a) Explain in a few words (proofs not necessary) why the intervals, I_1, I_2 , etc. form a nested sequence of closed intervals.
 - (b) Find three distinct points in $\bigcap_{n=1}^{\infty} I_n$.
 - (c) Thm. 2.5.3 has as its conclusion that the number ξ in $\bigcap_{n=1}^{\infty} I_n$ is unique, but in part (b) above, you found three points in this set. How is this possible?
 - (d) In the proof of the Nested Intervals Property (Thm. 2.5.2), a single number ξ is identified as being in $\bigcap_{n=1}^{\infty} I_n$; in the case of the nested intervals above, what number ξ does the proof describe?