Part I: Read and Respond (prepare for class Wednesday, April 30)

Read Sections 7.3 and 7.4, stopping when you get to the subsection entitled "Uniform Convergence and Integration," taking notes for yourself. Answer the following question(s) to turn in as part of your Part I assignment. Review the syllabus for parts (a)–(c) that should be included in this assignment.

Reading Question(s)

1. Let $\epsilon > 0$. With sequences, we sometimes had two (or more) N's in a particular situation, and we chose the maximum of the N's in our proof. With limits/continuity, we sometimes had two (or more) δ's, and we chose the minimum of the δ's. What will we choose if we have two (or more) partitions of an interval $[a, b]$ over which we wish to show that f is integrable (using the Theorem 7.2.8 that lets us just show the difference between an upper sum and a lower sum is less than ϵ)?
2. On page 229 (partway through the proof of Theorem 7.4.1) in the set-apart string of inequalities/equations after "To get the other inequality, observe that," why is $U(f, P_1) + U(f, P_2) < L(f, P_1) + L(f, P_2) + \epsilon$?
3. In the first paragraph of the proof of Theorem 7.4.2, why is "a function f is integrable on $[a, b]$ if and only if there exists a sequence of partitions (P_n) satisfying

$$\lim_{n\to\infty} (U(f, P_n) - L(f, P_n)) = 0\text{"}$$

an "immediate corollary to Theorem 7.2.8"?

Part II: Exercises (prepare for class for Wednesday, April 30)

1. Exercise 7.2.1
2. Show that $f(x) = x$ is integrable on $[1, 4]$.

Part III: Problems

Nothing new; feel free to turn in up to 5 revisions in the last week of classes if you'd like!