

Classical Analysis – Math 108b

Homework # 2

due 11 am Monday, January 24, 2005.

1. Exercise 6.5 in [Rudin] (i.e., Exercise 5 in Chapter 6 of Walter Rudin, Principles of Mathematical Analysis, Third edition).
2. Exercise 6.6 in [Rudin].
3. Exercise 6.11 in [Rudin].
4. Prove that $\|f\| = \int_a^b |f| dx$ defines a norm on $C[a, b]$. Does it define a norm on all of the space of Riemann integrable functions $R[a, b]$?
5. Construct a nonconstant increasing function α and a nonzero continuous function $f \in R_\alpha[a, b]$ such that $\int_a^b |f| d\alpha = 0$. Is it possible to choose α to be continuous?