Real Analysis 1, MATH 5210, Spring 2017

Homework 4, Normed Linear Spaces (7.1)

Due Friday, February 10, at 1:30

Write in complete sentences!!! *Explain* what you are doing and convince me that you understand what you are doing and why. Justify all steps by quoting relevant results from the textbook, class notes, or hypotheses. Do not copy the work of others; **do your own work!!!**

7.3. For $f \in L^1[a,b]$, define $\|f\| = \int_a^b x^2|f(x)|\,dx$. Prove that $\|\cdot\|$ is a norm on $L^1[a,b]$.

7.5a. Prove that ℓ^∞ is a normed linear spaces.

7.5b. Prove that ℓ^1 is a normed linear spaces.