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Analysis I
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HW 9

Due: 17 Nov 2015

The problems are written in the format 'chapter.section.problem-number' from Lang's book. Practice problems must be handed in and will be checked for honest effort. Portfolio problems will be graded thoroughly and may be revised until your solutions are of professional quality. Please submit each portfolio problem on a detached sheet of paper with your name on it.

Practice problems:

1. VIII.4.2
2. IX.2.5
3. IX.2.9
4. IX.3.4
5. IX.3.6
6. IX.5.2
7. IX.5.7

Portfolio problems:

P22. Evaluate $\sum_{n=1}^{\infty} n^2/2^n$. Justify the important steps of your calculation.

P23. True or false: The alternating harmonic series can be rearranged into an infinite series that diverges (has unbounded partial sums). Prove your answer.

P24. Find a sequence $\{a_n\}$ in an incomplete normed vector space such that $\sum_{n=1}^{\infty} \|a_n\|$ converges, yet $\sum_{n=1}^{\infty} a_n$ does not converge (to an element of the space).