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Analysis I
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HW 11

Due: Nov 18 in class. Justify all of your work.

1. Evaluate $\sum_{n=1}^{\infty} n^2/2^n$. Justify the important steps of your calculation.
2. IX.6.5
3. IX.7.1
4. IX.7.4
5. Prove that every piecewise constant function $f : [0,1] \to \mathbb{R}$ can be approximated arbitrarily well (in the sense of an L_1 norm) by a continuous function. (A piecewise constant function is the same as a step map, as defined on page 249 in the book). Is the same statement true if approximation is understood in the L^∞ sense?
6. If you were going to present Theorem X.3.1 (page 252) as an in-class presentation, write down the notes of what you would say.