

Analysis in \mathbb{R}^n
Math 204, Section 30
Winter Quarter 2008
Written Exercises from Week 4 (updated)

Exercise 0.0.1 Prove the Heine-Borel Theorem in \mathbb{R} using the open cover definition of compactness.

Exercise 0.0.2 Is the Cartesian product of a countable number of countable sets countable? Explain.

Exercise 0.0.3 Prove that any linear map $T : \mathbb{R}^n \rightarrow \mathbb{R}^m$ is continuous. (Assume that \mathbb{R}^n and \mathbb{R}^m have the usual metric.)