

Math 560
Fall 2005
Homework 5
Assigned Wednesday, 22 September, 2005

1. Without using the Heine-Borel Theorem, Prove that the interval $[a, b]$ is compact.
2. Without using the Heine-Borel Theorem, Prove that a closed ball in \mathbb{R}^k is compact.
3. Prove: If E is an infinite subset of a compact set K then E has a limit point in K .
4. (Section 1.8, #5, p. 69) Prove that S in n space is compact if and only if every sequence in S has a limit point that belongs to S .