

1. Abbott 1.4.3
2. Abbott 1.4.4
3. Abbott 1.4.5
4. Abbott 1.4.7
5. Abbott 1.4.10
6. Find explicit bijections to prove that the following sets have the same cardinality:
 - a) $(0,1)$
 - b) $[0,1)$
 - c) $[0,1]$
 - d) $\mathbb{R}$
7. **(Hand this one in to David.)**
 - a) Use induction to prove that a finite product of countably infinite sets is countably infinite. (*Hint*: it is enough to show that $\mathbb{N}^m$ is countable for each $m \in \mathbb{N}$).
 - b) Show that a countable product of countably infinite sets need not be countably infinite.
8. Abbott 2.2.1
9. Abbott 2.2.7
10. **(W)** Carefully prove that the sequence (x_n) given by $x_n = (-1)^n$ does not converge. **(Hand this one in to David.)**