Math 299 **Homework 9/11** **Fall 2013**

1. Find a concrete bijection between the intervals $(0, 1)$ and $(5, 8)$ in $\mathbb{R}$. Also, write a formula for the inverse of that function.

2. Show that the function $g : \mathbb{N} \times \mathbb{N} \longrightarrow \mathbb{N} \backslash \{0\}$ given by $(a, b) \mapsto 2^a \cdot (2b+1)$ is a bijection.

3. Is the set of all functions from $[3]$ to $\mathbb{N}$ countable?
   Compare it with sets that you are more familiar with.