Homework, due via email to dabel@post.harvard.edu Thursday, February 23, 2012 at 9:00 PM EST

Please list the names of any students with whom you collaborated.

1. Find a bijection between the set of all integers and the set of natural numbers (non-negative integers). That is, give a rule/formula assigning each integer to a non-negative integer and vice versa.

2. (a) Show that if two finite sets $A$ and $B$ are the same size, and $r$ is a total injective function from $A$ to $B$, then $r$ is also surjective; i.e. $r$ is a bijection.

(b) Give a counterexample showing that the conclusion of part (a) does not necessarily hold if $A$ and $B$ are two infinite sets that have the same cardinality.