Homework 4: Problem 1

William Svoboda (wsvoboda)

Collaborators: Epi Torres-Smith, Leslie Kim

Problem 1:
We wish to prove that every collection of disjoint intervals of positive length on the real line is countable.

It is given that any interval $I \subset \mathbb{R}$ contains a rational number. Therefore, because we can map the rational number to the set of rational numbers we can create an injection *from* the collection of disjoint intervals *to* the set of rational numbers.

Because the set of rational numbers is countable and we have an injection to that set, the collection of disjoint intervals must be countable as well.