

Homework 2

1. From the textbook: 13.1, 13.4 (a), 13.8
2. Show that any open subset of \mathbb{R} (with the standard topology) is a *countable* union of open intervals.
Hint: if $a, b \in \mathbb{R}$ and $a < b$, then there exists a rational number $q \in \mathbb{Q}$ with $a < q < b$.
3. Suppose that X and Y are discrete topological spaces. Is $X \times Y$ discrete? Explain.