Homework 12 Supplementary Problems

1. Prove that $|[0,1)| = |[0,1]|$.
2. A number $r \in \mathbb{R}$ is called *algebraic* if $\exists n \in \mathbb{N}, a_0, \ldots, a_n \in \mathbb{Z}$, such that

$$a_0 r^n + a_1 r^{n-1} + \cdots + a_0 = 0.$$

   Prove that the set of algebraic numbers is denumberable.