**Math 441 - Homework 8** Due Friday, Nov. 18

1. (10 points) Suppose that $f : \mathbb{R} \to \mathbb{R}$ is continuous and $f(x) = 0$ for all $x \in \mathbb{Q}$. Prove that $f(x) = 0$ for all $x \in \mathbb{R}$.

2. (10 points) The set of **zeros** $Z$ of a function $f$ is $Z = \{x \in \mathbb{R} : f(x) = 0\}$. Prove that if $f$ is continuous, then $Z$ is closed.