

Exercises

E12.2 [139] Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be defined as $f(x) = 1$ if $x \in \mathbb{R} \setminus \mathbb{Q}$, $f(0) = 0$, and $f(x) = 1/q$ if $|x| = p/q$ with p, q coprime integers, $q \geq 1$. Show that f is continuous on $\mathbb{R} \setminus \mathbb{Q}$ and discontinuous in every $t \in \mathbb{Q}$.

Show that the described function is u.s.c.

Solution 1. [13B]