

Analysis I - 2018 Graduate Examination

1. Show that every point in the Cantor set is its limit point.
2. Let $f : [0, 1] \rightarrow \mathbb{R}$ be a bounded function. Prove or disprove that f is Riemann integrable if f^2 is Riemann integrable.
3. Suppose that $f : \mathbb{R} \rightarrow \mathbb{R}$ is an increasing function. Show that there exists an one-side limit $f(x+)$ for every $x \in \mathbb{R}$.