Homework 4 of Introduction to Analysis(II)

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March 14, 2024

1. Since B is equicontinuous, for any $f \in B$ and $\varepsilon > 0$, there exists $\delta > 0$ s.t. for any $x, y \in A$, $|x - y| < \delta$ implies that $|f(x) - f(y)| < \dfrac{\varepsilon}{2}$.

2. First, since $|f'(x)| \leq 1$ for all $f \in B$ and $x \in (0,1)$. For any $\varepsilon > 0$, we take $\delta < \varepsilon$, for any $x, y \in [0,1]$ s.t. $|x - y| < \varepsilon$, $|f(x) - f(y)| \leq 1 \cdot |x - y| = \delta < \varepsilon$. Thus, B is equicontinuous.