

Math 131BH Spring 2018: Homework 7, Due 5/23

1. Show that the nowhere differentiable function given in Theorem 7.18 is in $C^\alpha(\mathbb{R})$ for some $\alpha \in [0, 1]$, that is,

$$|\varphi(x) - \varphi(y)| \leq C|x - y|^\alpha \text{ for any } x, y \in \mathbb{R}.$$

What is the range of α ?

2. p168, Rudin Problem 14.

3-5. p196, Rudin Problem 1, 2 and 3.

6. Let $\{a_n\}$ be a sequence of nonnegative real numbers, with the property that $\sum a_n x^n$ converges for $|x| < 1$ and $\lim_{x \rightarrow 1^-} \sum a_n x^n = A \in \mathbb{R}$. Show that then $\sum a_n$ converges and is equal to A .