

Name:

Warm-up #10

Let $f : X \rightarrow Y$ be a function. Show that f is continuous at $p \in X$ if and only if for each $\epsilon > 0$ there is a $\delta > 0$ such that $f(B_\delta(p)) \subset B_\epsilon(f(p))$, where

$$f(B_\delta(p)) = \{f(x) : x \in B_\delta(p)\}.$$