Advanced Calculus II, Fall 2022, Worksheet for Lecture 3

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Name: _____

Discussing the problems with other people is encouraged,
but you must write up your own work independently!

1. From last lecture, we used this fact: if $r \geq 0$ is a real number such that for all real numbers $\epsilon > 0$, we have $r \leq \epsilon$, then $r = 0$.

   Prove this.

2. Show that if X is a metric space, $a \in X$ and r is any positive real number, then the ball $B_r(a)$ of radius r about a is an open set.