Metric Continuity

1 Why

We want a definition for continuous function between arbitrary metric spaces.

2 Definition

Take two metric spaces. A function from the first metric space to the second metric space is **continuous at an object** if, for each positive number, there exists a second positive number so that all elements in the domain which are within the first positive number of the element the result of the function of that element is within the first positive number of the result of the fixed object.

A function between the metric spaces is continuous if it is **continuous** at each point of the domain.

2.1 Notation

Let (A, d) and (B, d') be metric spaces. Let $f : A \to B$. Then f is continuous at $a \in A$, if for all $\epsilon > 0$, there exists $\delta > 0$