

Math 301 — Uniform continuity

Summary. A function is continuous on a domain D if it's continuous at every point in the domain. When we prove a function is continuous at a given point using an ϵ - δ proof, our choice of δ might depend on both ϵ and the domain point we're considering. However, when our choice of δ can be chosen independently of the domain point, the function is called *uniformly continuous*.

Problem 1. Try proving the following functions $f : D \rightarrow \mathbb{R}$ fail to be uniformly continuous on the given domain D .

- a. $f(x) = 1/x$, $D = (0, 1)$.
- b. $f(x) = x^2$, $D = \mathbb{R}$.