Many-to-one

A function is called *many-to-one* (sometimes written 'many-one') if some function output value corresponds to more than one input value. In symbols, the function f is many-to-one if there are two distinct values a and b in the domain of f such that $f(a) = f(b)$. This is equivalent to saying that f is not one-to-one or that f is not injective.

Whether or not a function is many-to-one may depend on its domain. For example, the function $f(x) = \cos x$, $x \in \mathbb{R}$ is many-to-one (not injective) because $\cos 0 = \cos 2\pi$, whereas $f(x) = \cos x$, $0 \leq x \leq \pi$ is one-to-one (injective).

Copyright © University of Cambridge. All rights reserved.