

A word on notation

We discuss the notation used for functions.

Given a function f , we have a way of writing an inverse of f , assuming it exists.
Given a point x ,

$f^{-1}(x) = y$ such that $y = f(x)$, should it exist.

On the other hand, given x

$$f(x)^{-1} = \frac{1}{f(x)}.$$

Warning 1. *It is not usually the case that*

$$f^{-1}(x) = f(x)^{-1}.$$

This confusing notation is often exacerbated by the fact that

$$\sin^2(x) = (\sin(x))^2 = \sin(x) \cdot \sin(x) \quad \text{but} \quad \sin^{-1}(x) \neq (\sin(x))^{-1}.$$

Warning 2. *Note that*

$$\sin^{-1}(x) = \arcsin(x) \quad \text{but} \quad (\sin(x))^{-1} = \frac{1}{\sin(x)}.$$

In the case of trigonometric functions, this confusion can be avoided by using the notation \arcsin and so on for other trigonometric functions.