1 | What is a function?

A function $f: D \to C$ is a unary operation that takes every element in the domain D to exactly one element in the codomain C.

 $f(x) = x^2$ is a function over the domain of reals.

2 | A 1:1 function or injective function

A bijective function is a function f for which there exists a function g such that g(f(x)) = x for all $x \in D$. For every input, there is exactly one output, and for every output, there is exactly one input.

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f(x)=x^2 is not a 1:1 function, because both -1^2=1 and 1^2=1.
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3 | What is an inverse function

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An inverse function g: C \to D is a function such that g(f(x)) = x and f(g(x)) = x. There is no true inverse for f(x) = x^2, because it is not bijective.
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4 | How are the graphs related

The graph of an inverse function is reflected about y = x.

Exr0n • 2021-2022 Page 1