Domain of Injection to Countable Set is Countable

Theorem

Let X be a <u>set</u>, and let Y be a <u>countable set</u>.

Let $f: X \to Y$ be an injection.

Then X is also countable.

Proof

Since Y is countable, there exists an injection $g:Y \to \mathbb{N}$.

From Composite of Injections is Injection, $g\circ f:X\to\mathbb{N}$ is also an injection.

That is, X is countable.



Retrieved from "https://proofwiki.org/w/index.php? title=Domain_of_Injection_to_Countable_Set_is_Countable&oldid=161889"

This page was last modified on 24 September 2013, at 15:47 and is 601 bytes

Content is available under $\underline{\text{Creative Commons Attribution-ShareAlike License}}$ unless otherwise noted.