

one way to
Quantifiers : turn Predicates into Statements

Universal Quantifier : \forall means "for all", "every"

ex: $\forall x, x > 0$ means "for every number $x, x > 0$ "

Statements 

Existential Quantifier : \exists means "there exists"
 "there is"

$\exists x: x > 0$ means

"there exists a number x
 such that $x > 0$ "

Q: Is the following true or false? Discuss

$$\forall x, \exists y: x = y$$

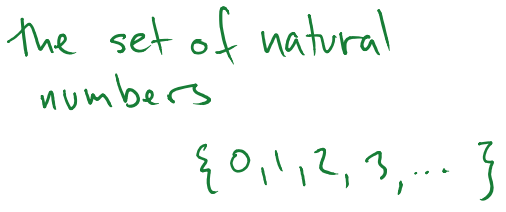
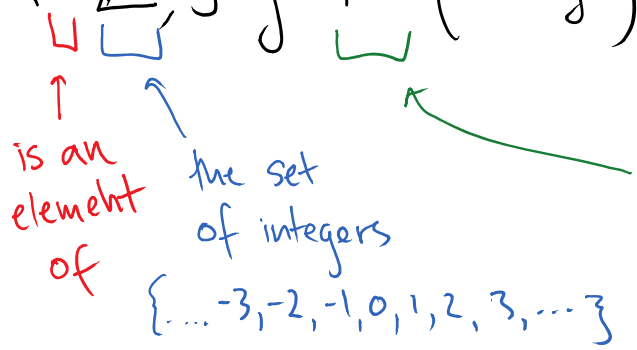
A) True

B) False

C) Not enough information to decide

Depends on the Domains of x, y

$\forall x \in \mathbb{Z} \exists y \in \mathbb{N} (x = y)$ False!



* Sometimes 0 is not included in natural no's

$x = -1$, an integer, but there is no natural number y s.t. $y = -1$.

$\forall x \in \mathbb{N}, \exists y \in \mathbb{N} : x = y$ True!

These types of statements appear often in proofs.

ex: Let $P(n)$ be the predicate $7^n - 1$ is divisible by 6.

We will prove statement \rightarrow

