CSC165 fall 2017

Mathematical expression: predicate logic

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Using Course notes: Mathematical Expression: predicate logic
Outline

bi-implication

predicates

multiple quantifiers

mixed quantifiers

negation

number theory intro

notes

annotated slides
compare and contrast...

“If it rains, then I will wear sneakers.”

“If and only if it rains, then I will wear sneakers.”
what’s a predicate?

\[ n > 7.2 \]

\( x \) is tall
predicate definitions
quantifiers $\forall$ and $\exists$

$n > 7.2$
translate quantified predicates
quantified binary predicates

\[ x + y = 17 \]
multiple quantifier examples
order matters!

\[ x + y = 17 \]
∃: examples
∀: lack of counterexamples
negate quantified predicates
manipulate negation
∀x ∈ N, ∃y ∈ N, x ≥ 5 ∨ x^2 − y ≥ 30
properties of integers, mostly $\mathbb{N}$
divisibility
primes
annotated week 1