CSC165 fall 2019

Mathematical expression: proofs

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Using Course notes: Proof

Outline

defining, unpacking, restricting

existential

universal

notes

$a \mid b$ and $Prime(p)$ statements packed and unpacked

restrict the domain

given domain U with $P, Q \subseteq U$

$P(x) : x \in P$, for $x \in U$ and $Q(x) : x \in Q$, for $x \in U$

There is a real solution to $x^2 + 2x + 3 = 11$

prove $n^2 + 2n + 5 > 4$ if $n \in \mathbb{N}$

prove $n^2 - 5n > 7$ for most $n \in \mathbb{N}$

prove $n \mid n+3 \Rightarrow n \mid 3$ for $n \in \mathbb{N}$

generalize $n \mid n+3 \Rightarrow n \mid 3$ for $n \in \mathbb{N}$

prove $m, n \equiv 1 \bmod 3 \Rightarrow mn \equiv 1 \bmod 3$

converse of previous example?

$$m, n \in \mathbb{N}^+ \text{ and } m \mid n \Rightarrow m \leq n$$

Notes