CS70–Spring 2022 — hw00 Solution

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Collaborators: NONE

5. Propositional Practice

(a) $(\forall k \in \mathbb{R})(\exists x \in \mathbb{R})(x^3 = k \wedge (\forall y \in \mathbb{R})(y^3 = k \implies y = x))$

(b) $P(p) \implies (\forall a \in \mathbb{N}, \forall b \in \mathbb{N})((\neg(p \mid a) \wedge (p \mid ab)) \implies p \mid b)$

(c) For all x and y in the set of real numbers, if the product of x and y is 0, then x equals 0 or y equals 0.

(d) There is no y in the set of natural numbers such that for all x in the set of natural numbers, if x is greater than y, then y divides x or x is a prime number.