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Example: Predicate: “ $n$  divides 8”

Domain :  $D = \mathbb{Z}^+$

Truth set :  $\{1, 2, 4, 8\}$

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II. Add quantifiers  $\forall$  or  $\exists$  :

“ $\exists n \in \mathbb{Z}$  such that  $n$  divides 8” (True)

“ $\forall n \in \mathbb{Z}, n$  divides 8” (False)

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1.  $\forall x \in R, x^2 \geq 0. (T)$

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3.  $\forall x \in R, \text{if } x > 2 \text{ then } x^2 > 4. (T)$

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1.  $\forall x \in R, x^2 \geq 0. (T)$

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3.  $\forall x \in R, \text{if } x > 2 \text{ then } x^2 > 4. (T)$

4.  $\exists x \in R \mid x > 2 \text{ and } x^2 \leq 4. (F)$

## NEGATION RULES

$$\sim (\forall x \in D, Q(x)) \equiv \exists x \in D \mid \sim Q(x)$$

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