

Homework 8

Li Yunzhi

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1 Homework 8.15

Answer 1 For 8.15

(1) $\forall x, s \quad x \in \{x|s\}$

We can only use this definition when x does belong to a set s . However, we don't have any method to confirm that x doesn't belong to a set s , for example an empty set \emptyset

(2) $\forall x, s \quad x \in s \Rightarrow \forall y \quad x \in \{y|s\}$

This definition has the same problem that we can't use this definition to confirm that x doesn't belong to an empty set. It still has many other problems, such as it seems that it is a recursive definition but it doesn't have an end.

2 Homework 8.20

Answer 2 For 8.20

(1) $\forall x \quad \text{Even}(x) \Leftrightarrow \exists y \quad x = y + y$

(2) $\forall x \quad \text{Prime}(x) \Leftrightarrow \forall y, z \quad x = y \times z \Rightarrow y = 1 \vee z = 1$

(3) $\forall x \quad \text{Even}(x) \Rightarrow \exists y, z \quad \text{Prime}(y) \wedge \text{Prime}(z) \wedge x = y + z$