Remark 3.14. *[1X1](Solved on 2022-10-11) The variable x, which is quantified in a part of a formula, is again free if it is reused in another piece of the formula; this is syntactically permissible but makes the formula less readable, as in this example that uses the language of set theory*

$$A \subseteq \mathbb{N} \wedge x \in \mathbb{N} \wedge x \geq 4 \wedge (\forall x \in A, x \leq 10)$$

which should be written as

$$A \subseteq \mathbb{N} \wedge x \in \mathbb{N} \wedge x \geq 4 \wedge (\forall y \in A, y \leq 10)$$

renaming the variable inside the part where it is quantified.