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Philos 12A

Klaus / 106

<div align="center">Assignment #8</div>

Exercise 9.11.2

Sentence #3: $\forall$ x (Tet(x) $\wedge$ Small(x))

Sentence #4: $\forall$ x (Tet(x) $\rightarrow$ Small(x))

When looking at sentence 3 we evaluate it left to right starting with the inside parentheses. Since x is a tetrahedron must be true, then x being small also must be true to satisfy the inside of the "and". So we can say for all x, x is a tetrahedron and is small. Thus sentence #3 is true.

When we take a look at sentence 4, we interpret $\rightarrow$ as x is a tetrahedron if and only if x is small. Therefore x must be small so that also means x is a tetrahedron thus resulting in a true value, sentence #4 is true.

There is no world that exists where sentence #3 is true and sentence #4 is false because they both evaluate truth values.

Exercise 9.11.3

Sentence #1: $\exists$ x (Dodec(x) $\wedge$ Large(x))

Sentence #2: $\exists$ x (Dodec(x) $\rightarrow$ Large(x))

When looking at sentence 3 we evaluate it left to right starting with the inside parentheses. Since x is a dodec must be true, then x being large also must be true to satisfy the inside of the "and". So we can say for all x, x is a dodec and is large. Thus sentence #3 is true.

When we take a look at sentence 4, we interpret $\rightarrow$ as x is a dodec if and only if x is large. Therefore x must be large so that also means x is a dodec thus resulting in a true value, sentence #4 is true.

There is no world that exists where sentence #3 is true and sentence #4 is false because they both evaluate truth values.