

1. Transcribe the English sentences below into syntactical PL sentences. On your quest for true knowledge, you embarked on a journey around the world. One day, you stumbled upon a Zen Buddhist temple, in front of which stood a stone tablet with the title: “The Six Noble Truths”. To unravel this mystery, you decided to make use of your mastery in predicate logic. Assume the following:

- Let Kxy be “x knows y”. Px be “x is a person”. You may not introduce more predicates.
- Let the universe of discourse U be the set of all objects, including people. (how would this change the way quantifiers are interpreted?)
- “Everyone” refers to all people, while “everything” refers to all things AND people. “Someone” refers to at least one person, and “something” refers to at least one thing, which may or may not be a person.
- If you have trouble picturing a nonhuman “thing” as having the capacity to know, think of it as a robot.

The Six Noble Truths

1. Some people only know people and know nothing else.
2. Knowing everything is not a necessary condition for knowing something.
3. Everyone knows nothing unless someone knows something. (Interpret as weak unless)
4. *Everything* is unknown to someone.
5. Everything is unknown to *someone*.
6. Everyone knows only oneself and no one else. (This dictum seems to contain wisdom cannot be encapsulated by PL , explain why.)

2. Use tableaux to carry out the following task:

1. Tautology, contradiction, or contingent?

(a) $\forall xDx \vee \exists x\neg Dx$

(b) $\forall xNx \vee \forall x\neg Nx$

(c) $\forall x[\forall yPy \rightarrow Px]$

2. find a consistent model for:

(a) $\{\forall x\exists yMxy, \exists y\forall x\neg Mxy\}$

(b) $\{\exists x\exists yLxy, \exists x\exists y\neg Lxy\}$

3. Translating and proving PL arguments Use tableaux to check if the following argument is valid.

1. All cats are animals. Therefore all tails of cats are tails of animals.