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Formalized Theories

1 A *theory* is a set whose members are just the sentences in some language that follow from the set.

2 A sentence ϕ is a *thesis* of a theory T:

a iff $\phi \in T$.

b iff ϕ is a consequence of T.

3 A *model* of a theory T is an interpretation of the language of T under which all the theses of T come out true.

4 A theory T is *consistent*:

a. iff T has a model.

b iff no sentence and its negation are both theses of T.

c iff some sentence (in the language of T) is not a thesis of T.

5 A theory T is *complete* iff for any sentence ϕ (in the language of T) either ϕ or the negation of ϕ is a thesis of T.

6 A set of sentences Γ is *independent* iff for every element ϕ of Γ, neither ϕ nor the negation of ϕ is a consequence of $\Gamma \sim \{\phi\}$.

7 A set of sentences Γ is *decidable* iff there is a step-by-step procedure which, applied to any arbitrary sentence ϕ, will decide in a finite number of steps whether or not ϕ belongs to Γ.

8 A theory T is decidable iff the set of theses of T is decidable.

9 A theory T is an *axiomatizable* (or *formal*) theory iff there is a decidable subset of T whose consequences (in the language of T) are just the theses of T. Such a subset is *a set of axioms* for T.

10 A theory T is *finitely axiomatizable* iff T has a set of axioms that is finite.

11 A theory T is *ω-categorical* iff any two models of the theory in the domain ω are isomorphic.