

-NoValue-

met.1 Introduction

sol:met:int:
sec First-order logic has a number of nice properties. We know it is not decidable, but at least it is axiomatizable. That is, there are proof systems for first-order logic which are sound and complete, O.s., they give rise to a **derivabilidade** relation $\vdash$ with the property that for any set of **sentenças** Γ and **sentença** φ , $\Gamma \models \varphi$ iff $\Gamma \vdash \varphi$. This means in particular that the validities of first-order logic are **computavelmente enumerável**. There is a computable function $f: \mathbb{N} \rightarrow \text{Sent}(\mathcal{L})$ such that the values of f are all and only the valid **sentenças** of $\mathcal{L}$. This is so because **derivações** can be enumerated, and those that **deriva** a single **sentença** are then mapped to that **sentença**. Second-order logic is more expressive than first-order logic, and so it is in general more complicated to capture its validities. In fact, we'll show that second-order logic is not only undecidable, but its validities are not even **computavelmente enumerável**. This means there can be no sound and complete proof system for second-order logic (although sound, but incomplete proof systems are available and in fact are important objects of research).

First-order logic also has two more properties: it is compact (if every finite subset of a set Γ of **sentenças** is satisfiable, Γ itself is satisfiable) and the Löwenheim–Skolem Theorem holds for it (if Γ has an infinite model it has a **infinito enumerável** model). Both of these results fail for second-order logic. Again, the reason is that second-order logic can express facts about the size of **domínios** that first-order logic cannot.

Créditos das Imagens

Referências Bibliográficas