int.1 Introduction

The interpolation theorem is the following result: Suppose $\models \varphi \to \psi$. Then there is a sentence $\chi$ such that $\models \varphi \to \chi$ and $\models \chi \to \psi$. Moreover, every constant symbol, function symbol, and predicate symbol (other than $=$) in $\chi$ occurs both in $\varphi$ and $\psi$. The sentence $\chi$ is called an interpolant of $\varphi$ and $\psi$.

The interpolation theorem is interesting in its own right, but its main importance lies in the fact that it can be used to prove results about definability in a theory, and the conditions under which combining two consistent theories results in a consistent theory. The first result is known as the Beth definability theorem; the second, Robinson’s joint consistency theorem.

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Bibliography