Lindström's theorem

Canonical name	LindstromsTheorem
Date of creation	2013-03-22 13:49:30
Last modified on	2013-03-22 13:49:30
Owner	mathcam (2727)
Last modified by	mathcam (2727)
Numerical id	8
Author	mathcam (2727)
Entry type	Theorem
Classification	msc 03B10

One of the very first results of the study of model theoretic logics is a characterization theorem due to Per Lindström. He showed that the classical first order logic is the strongest logic having the following properties

- Being closed under contradictory negation

- Compactness

- Löwenheim-Skolem theorem

also, he showed that first order logic can be characterised as the strongest logic for which the following hold

- Completeness (r.e. axiomatisability)

- Löwenheim-Skolem theorem

The notion of "strength" used here is as follows. A logic $\mathbf{L}'$ is stronger than $\mathbf{L}$ or as strong if every class of structures definable in $\mathbf{L}$ is also definable in $\mathbf{L}'$.