

# MEANINGS OF SPECIFIC TERMS RELATED TO THE CONCEPT OF FINITE LIMIT OF A FUNCTION AT ONE POINT

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The influence of colloquial meanings and everyday uses of some specific terms from the language of Calculus, namely, “to approach,” “to tend,” “to reach,” “to exceed,” “to converge” and “to limit,” has been reported in several studies, such as Cornu (1991) and Monaghan (1991). We performed an empirical study that focused on the personal meanings that students in upper secondary education (17-18 years old) have of the above mentioned specific terms (we exclude “to limit,” whose meaning is given by the context) related to the concept of finite limit of a function at a point. We use an interpretive framework based on conceptual analysis to establish both the mathematical and colloquial meanings of these terms. We aim to contrast these meanings with students’ definitions; we also consider the effective terms that students use in fact to explain their definitions.

We conducted a semistructured interview for this purpose. The analysis revealed that students showed colloquial and mathematical interpretations, as well as other different interpretations. We stress some distinctions between “to approach” and “to tend” by students, such as “to approach” is more general; “to tend” implies reachability; the action of “to tend” is finite; “to tend” is a technical term. “To reach the limit” is mostly interpreted as “to arrive at or to touch the limit” in a colloquial sense, although some students consider “to reach” as “to know the exact value of the limit or the value of  $f(x)$  (continuity).” “To exceed the limit” has a particular interpretation as “to be both above and below the limit”. Finally, some students provided an original definition of “to converge” (this term was unfamiliar to students in the context of finite limit of a function at a point), “The right and left-sided limits are the same number”. This way, our prior analysis of meaning can be extended with other different meanings previously unexpected.

## Acknowledgements

This study was performed with aid and financing from Fellowship FPU AP2010-0906 (MEC-FEDER), projects EDU2009-11337 and EDU2012-33030 of the National Plan for R&D&R (MICIN), Subprogram EDUC, and group FQM-193 of the 3rd Andalusia Research Plan (PAIDI).

## References

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