

## Types of Limit Application Problems in Engineering Students: Case Studies

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**Abstract :** The society of the 21st century requires training of engineers capable of solving routine and non-routine problems in applications of the limit of real functions, as part of the course Calculus I. For this purpose, research was conducted with a methodological design that combines quantitative and qualitative procedures and that aims, to identify and to characterize the types of problems according to their nature and context, through the application of a mathematics test; to know— through a questionnaire— the opinion of difficulties in their solution, previous and missing knowledge of some students of three engineering careers of a state university in Chile. This research is completed with three case studies. The results favor the performance of students in solving problems of a fantasist and realistic context, but these do not guarantee mathematical skills which are necessary to solve non-routine problems of limit applications. In conclusion, through this research, it became clear that the students of the three engineerings do not have all the necessary skills to solve problems of application of the limit of a function of the real variable.

**Keywords :** case studies, engineering program, limits, problem solving

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