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**May F Hamdan\*** (mhamdan@lau.edu.lb), LAU, POBox 13-5053/F64, Beirut, 13-5053/F6, Lebanon. *Parameter or variable or unknown? The special case of the definite integral.* Preliminary report.

In this report I discuss the difficulties students have with understanding the differences between a parameter, an index, and a variable. How do students understand the difference between a determinate, an indeterminate and an unknown? Which of these "values" are temporary indicators? I study these differences through the genetic decomposition of Riemann sums (Transcribing an Animation: The case of the Riemann Sums: May Hamdan, appeared in the proceedings of the September 2009 10th International Conference "Models in Developing Mathematics Education"). The large number of referents in the formula of the rieman sums as a limit of an infinite sum tends to be confusing. What do all those referens represent? How do they differ in nature? Which depend on the other? Will they eventually have one value. These questions lead to studying how students comprehend the parameter as a placeholder which is changing Index (temporary) yet it remains indeterminate in that it is not subjected to an inquisitorial procedure that would reveal its hidden numeric identity. Others understand it as a generalizer, an implicit value that is conceptually more difficult than a variable. A rather generic organizer used mostly in the description of a (dynamic) process. (Received September 07, 2009)