

ZMATH 2016c.00855**Barragués, José I.; Morais, Adolfo****A classroom note to help student understanding of the accumulation function, $F(x) = \int_a^x y(t)dt$.**
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From the introduction: For many students the concept of the integral is reduced to the search of inverse derivatives and its interpretation as the area under a curve. Students may also identify the integral with the rule of Barrow, even when such rule cannot be applied. For example, many students are unable to explain why it is incorrect to apply Barrow's rule to the function $f(x) = x - 2$ in the interval $[-1, 1]$, obtaining: $\int_{-1}^1 \frac{1}{x^2} dx = -2$. Students may know different methods of integration, but may not be able to apply them appropriately. In addition, a large number of students may identify "integral" with "antiderivative", without being aware of any process of convergence. The concept of accumulation is central to the idea of integration, and therefore is at the core of understanding many ideas and applications in Calculus. Analysis of the accumulation function, $F(x)$, has great theoretical importance because it paves the way to the Fundamental Theorem of Calculus. Nevertheless, the definition of $F(x)$ can seem very artificial to students. We present the following activities to help first-year college and university students better understand the concept of integration.

Classification: I55*Keywords:* university teaching; integral calculus; concept formation; student activities; concepts; accumulation function; average value; definite integrals; Barrow's rule; fundamental theorem of calculus; mathematical applications; mathematical model building