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Rodríguez, Omar Hernández; Fernández, Jorge M. López

A semiotic reflection on the didactics of the chain rule.

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Summary: According to (Fried, 2008), there is an intrinsic tension in trying to apply the history of mathematics to its didactics. Besides the widespread feeling that the introduction of didactic elements taken from the history of mathematics can detract the pedagogy of mathematics from the attainment of important goals, (Fried, 2008, p.193) describes a pair of specific pitfalls that can arise in implementing such historical applications in mathematics education. The description in (Fried, 2008), is presented in the parlance of Sausserian Semiotics and identifies two semiotic “deformations” that arise when one fails to observe that the pairing between signs and meanings in a given synchronic “cross-section” associated with the development of mathematics need not hold for another synchronic cross section at a different time. In this exposition, an example related to an application of the history of the chain rule to the didactics of calculus is presented. Our example illustrates the semiotic deformations alluded by (Fried, 2008), and points out a possible explanation of how this may lead to unrealistic pedagogical expectations for student performance. Finally, an argument is presented for the creation of a framework for a historical heuristics for mathematics education, possibly beyond the bounds of semiotics.

Classification: I44 I45 A30 C74 C75

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