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Teaching calculus through experimentation and empiricism. Preliminary report.

Students dislike mathematics because of its static presentation as an endless list of rules and formulas. Can it instead be presented so that students devise hypotheses about different calculus concepts and test them with empirically “in the lab”? This presentation outlines a method for such an interactive, visual presentation of calculus designed to encourage critical thinking skills through empirical testing using modern computer software. It will outline a rubric for introducing math topics using software-assisted guided-discovery activities consisting of a sequence of graphical experiments, with two concrete examples to illustrate this rubric in practice using Maple, a popular computer algebra system. (Received September 17, 2008)