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Murray H. Siegel* (murray.siegel@centralaz.edu), 20159 N GEYSER DRIVE, Maricopa, AZ 85238. *Discovering the Derivative and Its Meaning with the Graphing Calculator.*

Students tend to master a concept more successfully if they can discover the concept. Many calculus students memorize the definition of the derivative, learn various rules for taking the derivative of specific functions but never internalize the meaning of this valuable tool. A graphing calculator is used in a 5-step process to "discover" the derivative of common functions. First the student graphs the function and decides where the derivative should be positive, where zero and where negative. The 2nd step is to replace "h" in the definition of the derivative with .0001. The 3rd step is to graph this derivative function. The next step is to determine what function would provide such a graph and validate that this is the derivative of the original function by graphing it on top of the function found in step 3. Finally the graph of the derivative is examined to insure that it meets the criteria established in step 1. The class works through a number of different functions and then examines more functions for homework. Once the class is satisfied that they have identified the derivatives, the definition of the derivative is used to prove that the discovered derivative is correct. (Received August 08, 2008)