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Daniel Maxin* (daniel.maxin@valpo.edu), Department of Mathematics and CS, 1900 Chapel Drive, Valparaiso, IN 46383. *Why do we need intervals for the First Derivative Test?* Preliminary report.

Every condition stated in a theorem has a purpose and students, from time to time, should ask themselves why that particular condition is there and what exactly DOES NOT work if we disregard it. In this presentation I will focus on two familiar theorems in Calculus 1: the First Derivative Test and the Increasing/Decreasing test. One critical feature in these theorems is that the sign of the derivative (positive or negative) is required on an interval and not on an isolated point. From the student perspective, the word "interval" is easily overlooked and, in other cases it is not even mentioned in the statement of the theorem. To illustrate this I will propose a MAPLE exercise that leads to two counter-examples emphasizing the importance of finding the sign of the derivative on intervals rather than isolated points. (Received August 28, 2009)