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**Steven Hetzler\*** (SMHetzler@Salisbury.edu), Dep't of Math & C.S., Salisbury University, 1101 Camden Ave., Salisbury, MD 21801, and **Robert Tardiff**. *Auditory Graphs in Excel for Calculus*.

To engage students in general as well as communicate more effectively with those who are not visual learners, we developed a software tool that represents a function both as a varying pitch and as a standard graph. Users familiar with spreadsheets will find this software tool easy to learn and use; it is implemented in Excel. It is an application of sonification which is the use of abstract sounds to represent data and, more precisely, an implementation of an auditory graph, a sound whose pitch at time  $t$  is determined by the value of a function at time  $t$ . The tool synchronizes an auditory graph with an animation that draws the function's graph as the sound plays – a sonimation. Materials have been developed where students can explore limits, qualitative properties of functions and derivatives, and integrals and Riemann sums in computer laboratory sessions. Instructors can also use sonimations in a computer equipped classroom for demonstrations. We will present a sample of sonimation activities and exercises used to measure the effectiveness of sonimations as a means for helping students learn calculus. This work has been partially supported by a grant from the NSF: DUE – 0442450. (Received September 11, 2008)