

1014-U1-213      **David R Hill\*** (dhill001@temple.edu), Mathematics Department 038-16, Temple University, Philadelphia, PA 19122, and **Lila F. Roberts.** *Sine Waves and Sound.*

In precalculus and calculus we introduce the graphical properties of sine waves including amplitude, period, and phase shift along with their algebraic form. We expect students to use the accompanying algebraic and graphical properties to model (simple) physical phenomena. This demo develops the connection between sine waves and the sounds that they can generate by providing an opportunity for students to use Excel to generate wave files that correspond to sine waves written in an acoustical format used by acoustic engineers, physicists, and the speech and hearing sciences. In this format the frequency of the wave plays a pivotal role. The Excel program employs a macro, called WaveWriter, that generates a wave file from data that is analogous to that used to graph a sine wave. Thus in addition to geometric, numeric, analytic, and verbal representation we can include sound as another instructional modality for this topic. (Received August 23, 2005)