

1014-Z1-478

Richard J Marchand* (richard.marchand@sru.edu), Slippery Rock University, Department of Mathematics, 229 Vincent Science Hall, Slippery Rock, PA 16057, and **Timothy J McDevitt** (McDevittt@etown.edu), Department of Mathematics, One Alpha Drive, Elizabethtown College, Elizabethtown, PA 17022. *Is there a "real" problem with your mathematical software?* Preliminary report.

Many mathematical software products including Maple, Mathematica, Derive, Mathcad, Matlab, and some of the TI calculators use complex arithmetic by default. Unfortunately, this causes surprising results when users expect "real" arithmetic. Common problems are manifested in erroneous graphs for functions involving radicals, logarithms, inverse trigonometric and hyperbolic functions, and power functions. These problems can cause confusion for students. Mathematical explanations for the erroneous graphs will be provided along with some workarounds for certain software packages. It will also be shown that these problems are not limited to graphing. (Received September 17, 2005)