

1014-W1-246 **Norton Starr*** (nstarr@amherst.edu), Math. Dept., Mudd Bldg., Amherst College, Amherst, MA 01002. *Two calculus problems from the real world: volume and root finding.*

A former student now in industry sent me a problem which his engineering colleagues couldn't solve. They sought the volume removed from a right circular cone by a slice perpendicular to its base. The problem is somewhat complicated, yet admits a closed form solution. This is a good exercise in various methods of single and multivariable calculus. It arose in determining the strength of an elevated railway support structure. The other problem also was sent by a former student, who needed the solution for work in a graduate program in materials science. It asks for the root(s) of a transcendental function, one term of which grows so very slowly as to make graphing calculators of unlikely assistance. This example shows the merit of analytic approaches to problems where graphics might traditionally be applied. (Received August 30, 2005)