1067-W1-617 **Andrew Simoson*** (ajsimoso@king.edu), King College, 1350 King College Road, Bristol, TN 37620. *Newton's subjunctive G-flat opus.*

Appropriate for a vector calculus class when studying triple integration, we look at Newton's flattening of the earth problem of problem 3, book 3 of his *Principia* where he estimates the difference Δr in earth's polar and equatorial radii. In particular Newton states this result: for a uniform density ellipsoid "deprived of all its motion" with polar to equatorial radius as 100 is to 101, then the gravity at the north pole to the gravity at a point on the equator is 501 to 500. Although Newton refers to his solution process as "making the computation" he is really evaluating at least two triple integrals, one of which must be approximated. We set up and evaluate the integration, and then repeat the process using a two-tier density (and more realistic) model of the earth—a model that involves knowing G, the universal gravitational constant, first determined by Cavendish in 1798. Will the improved model give a better estimate than Newton's guess of 17.1 miles for Δr? The actual value for Δr is 13.3 miles. (Received September 11, 2010)