Physics 709 Problem Set #0: Practice introductory problem.
        The point here is not so much whether you can solve it, I certainly hope you all can, but in how you PRESENT the solution. Draw a picture, clearly state your starting point (fundamental principles), use WORDS to describe your logic along the path of the solution. Comment on the implications of your solution, sketch (or plot) graphs of results, does it make sense in obvious limits (as t or r -> 0 or ∞ ,...)

DUE: Friday, Aug. 27 in class

Typical Undergraduate Mechanics Problem:
A classic thought experiment is to consider the dynamics of a particle dropped through a hole bored all the way through the center of the earth to the opposite surface. Find an expression for the force (as a function of distance from the center of the earth) on the particle of mass m dropped through such a hole. Make observations about the consequences of this force. Using realistic numbers, estimate the time it would take for the particle to emerge on the other side of the earth. Assume the earth has uniform density, is not rotating, and the hole is a pure vacuum.