AST353 (Spring 2013)
ASTROPHYSICS
Problem Set 3
Due in class: Thursday, April 4, 2013
(worth 10/100)

1. Curved Space

Carefully work through sections 9.1 and 9.2 of the Gron/Naess textbook ("Einstein's Theory").

a. Briefly explain: What is the difference between *extrinsic* and *intrinsic* curvature?

b. Consider the following curve:

$$y = 3x^3 + x^2 \ .$$

What is the curvature, $K = d\phi/ds$, of this curve (i.e., evaluate equation 9.2)?

c. Calculate the Gaussian (intrinsic) curvature of Earth's surface (in appropriate units)!

2. Einstein Field Equations

Watch (on high alert) the following YouTube movie:

http://www.educatedearth.net/lecture.php?id=90

Be prepared to answer questions that I might ask at random on April 4!