Jan 12th, 2011
P340: Homework Assignment No. 1

DUE DATE: Friday, Jan. 28th. 2011
Please note that late assignments will not be marked

(1) Write an essay, of roughly 1200 words, which expresses your views on the existence of a 'supra-sensible' world, populated by abstract "Forms". This world is to be distinguished from the perceived world of which we are directly aware, although it is presumably related to it in some way. You should briefly discuss the opinions of at least some of the ancient Greeks, or indeed any other thinker of the past or present, but by far the most important part of the essay should give your own analysis of the question. Feel free to be creative in your use of examples and situations, and to develop your own ideas and opinions. What is most important here is the quality of the arguments you use to arrive at your views.

(2) Amongst the remarkable achievements of the ancient Greeks was their development of astronomy. The following two examples illustrate this:

(i) Eratosthenes measured the diameter of the earth by comparing shadows of vertical sticks in 2 places. Explain how this was done, using pictures to illustrate your argument.

(ii) Epicycles were invented to describe planetary motion, and notably, to explain the apparent retrograde motion of planets in the sky. Taking the planet Mars as an example, first explain in detail how the epicycle theory, in the form developed by Ptolemy, was supposed to explain this. Then show how the modern picture of planetary motion explains retrograde motion. You should use pictures to explain your argument.

(3) Throughout the Greek period, beginning with Pythagoras, and continuing through Zeno, Eudoxus, Plato, etc., to the great Greek mathematicians of the Alexandrian and later schools, there is a fascination with geometry (which turned out later to be of enormous importance for the development of science). The following very simple example illustrates one aspect of this. The Greeks had both a geometric and an arithmetical way of finding the area of geometrical figures. Consider a simple "right triangle", and show how one can get the area by (a) treating it as half of a rectangle (the geometric method) and (b) by approximating it as a set of thin rectangles, and making the number of these larger and larger as the thickness gets smaller and smaller.