

Mathematics and Democracy – Historical Assignment 2

The French Revolution

Due Monday, May 16, 2005

Except where noted, none of your responses should exceed half a page. I'm expecting quality, not quantity. Choose your words carefully. Questions 2 and 3 come from the enclosed class notes, as explained in class; "OH" refers to an overhead image. Question 5 is a reading from Christopher Dawson's *The Gods of Revolution*.

1. Here we will solve the same problem, using first synthetic geometry, and then with analysis.
 - (a) Given an equilateral triangle, use ruler and compass to draw the circle that touches all three of its corners (see diagram).
 - (b) Assuming that the triangle has length 1 meter, calculate the length of the radius of the circle you drew in (a).¹
2. (*from class notes*) Explain the irony in how the revolution affected the mathematics community in France as opposed to Naples. Which of the approaches to mathematics that you've seen so far (synthetic geometry, analysis, engineering geometry) do you think is the best approach to mathematics to benefit the people today?
3. (*from class notes*) Explain how the metric system arises from the original democratic ideals of the French Revolution. Why, then, do you think that the USA is so intransigent on the question of metric conversion? In what way is the USA's opposition to metric conversion based on the same principles that led France to invent it in the first place?
4. Pick the discipline within the social sciences that you're most familiar with. Describe the extent to which it attempts to live up to mathematical/scientific ideals, and the degree to which it succeeds. What scientific/mathematical tools of measurement and evaluation are used? What are their shortcomings?
5. (*from the enclosed reading*)
 - (a) What is the connection between liberalism and democracy? Is liberalism as defined in the reading it the same as what the word "liberal" means today in America?
 - (b) Summarize the author's description of the role played by scientific and mathematical ideas in the rise of liberalism and democracy.

¹ You'll need to know the Pythagorean Theorem for this. See me if you don't remember it.