

ASSIGNMENT 3

due Wednesday, September 19

Instructions

By Monday, September 17:

- Read the rest of Chapter 2 of TTT.

By Wednesday, September 19:

- Read Chapter 3 of TTT, until the discussion of Descartes on page 74.
- If you would like, also read the section on the binomial theorem, on page 81.

By Friday, September 21:

- In Cahn, read the biography of Hobbes on page 378,
- paragraph 1 of the introduction to *Leviathan*, on page 380, and
- Chapter I, and
- paragraphs 1-2 and 7-11 of Chapter III.

Turn in the homework assignment at the beginning of class on Wednesday, September 19.

Homework assignment

1. Prove that the square root of 3 is not rational. (Hint: the argument will be similar to the proof that the square root of 2 is not rational.) (M)
2. TTT, study question 2 on page 18 (L)
3. TTT, study question 2 on page 21 (M)
4. On what grounds does Aquinas reject Anselm's ontological argument? Explain his distinction between the two ways that something can be self-evident in itself. (M)
5. Show that the set of even numbers $\{0, 2, 4, 6, \dots\}$ has the same cardinality as the set of natural numbers, by defining a bijection between them. (S)
6. What does Hobbes have to say about universities, and their reliance on the texts of Aristotle? (S)

Thought questions

1. TTT, study questions 1 and 3 on page 18
2. TTT, study questions 1 and 3 on page 21
3. Show that the intervals $[0,1]$ and $[0,2]$ have the same cardinality. (By definition, $[0,1]$ is the set of all real numbers between 0 and 1, inclusive; and the similarly for $[0,2]$.)

4. Discuss the analogies that Hobbes draws between a human being, an automaton, and a commonwealth.
5. TTT, review questions on page 31

The following questions are entirely *optional*, for those of you who are mathematically inclined:

6. Show that the cardinality of the set of functions from the natural numbers to the natural numbers is larger than the cardinality of the set of natural numbers. (See page 29 of TTT.)
7. Show that the proof on the handout also shows that the set of natural numbers, \mathbb{N} , does not have the same cardinality as the real interval $[0,1]$.
8. TTT, study questions 1-4 on page 30 (M)
9. Show that the set of rational numbers, \mathbb{Q} , has the same cardinality as the set of natural numbers.