

MTH 6610 - History of Math Reading Assignment #4

SUMMER 2018

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Name _____

Instructions. Read pages 105 - 137 to find the answers to these questions in your reading.

1. What formula for generating Pythagorean Triples generates sides of right triangles having the characteristic that the hypotenuse is of length one greater than one of the legs?
2. What formula for generating Pythagorean Triples generates sides of right triangles having the characteristic that the hypotenuse is of length two greater than one of the legs?
3. In Euclid's book X of *Elements*, there is a formula for generating Pythagorean triples. What is the formula, and what is so special about it?
4. What is considered to be the Pythagorean School's greatest contribution to Mathematics?
5. What did the Pythagoreans mean when they defined two line segments to have "**common measure**"?
6. Another "proof" of the irrationality of $\sqrt{2}$ is a "construction proof" involving a unit square and the construction of an infinite sequence of successively smaller squares, using this unit square. How does this construction yield the contradiction that turns out to be the "crux" of the proof? (Give the basic idea. You don't have to go into rigorous details.)
7. What contributions to mathematics were made by Theodorus of Cyrene and Theaetetus of Athens?
8. Name three famous construction problems of the Greeks, and briefly describe what each problem calls for.
9. How were the constructions in these problems to be performed?
10. What noteworthy construction problem did Hippocrates (of Chios) solve, and what is so unusual about this problem?
11. What is considered to be Hippias' most noteworthy contribution to mathematics?

Also: on p. 117, do the exercises #4, 15, 16, 17