**Presentations03 Ancient Greek Mathematics**

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|  | **Topic** | **presenter** |  |
| 1 | Use the method I presented in class to show that the side and diagonal of the square are incommensurable. (The method I presented showing that the side and diagonal of the pentagon are incommensurable.) There is a picture hint in the notes on this lecture. |  |  |
| 2 | Calculate the ratio of the side of a regular pentagon to the diagonal of the regular pentagon. Hint: look at my calculations in terms of n and m. |  |  |
| 3 | Use the figurate square numbers to prove that the sum of the first $n$ odd numbers is $n^{2}.$ |  |  |
| 4 | Look up Hippocrates of Chios and use his method to calculate the area of a lune.  |  |  |
| 5 | Use the Quadratrix of Hippias to trisect an angle.See <https://en.wikipedia.org/wiki/Quadratrix_of_Hippias> for a proof. |  |  |
| 6 | Use the Quadratrix of Hippias to square the circle.(See the above link for this one too.) |  |  |
| 7 | Alpha Centauri, the nearest star is about 4.3 light years away; the diameter of earth’s orbit is about 180,000,000 miles. How far away would a dime need to be (flat side facing you) to subtend the same angle as the parallax angle for Alpha Centauri from opposite ends of earth’s orbit.  |  |  |
| 8 | Prove that the fifth postulate of Euclid holds if and only if the sum of the angles of triangle is 180o. |  |  |
| 9 | Pons Asinorum: what is it and work through the details. |  |  |
| 10 | Prove the Exterior Angle Theorem. |  |  |
| 11 | Show how Eratosthenes calculated the size of the earth. |  |  |
| 12 | Use the spiral of Archimedes to trisect an angle. |  |  |
| 13 | Select two problems from your textbook in the Greek Geometry section and solve them. Get my okay and confirmation regarding presenting the problems you select.  |  |  |
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