Assignment 7 due 0ct 22

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Feel free to e-mail with questions.

A) We say two segments AB and CD are commeasurable if there is a third segment EF and two natural numbers n and m such that AB can be covered by n disjoint copies of EF and CD can be covered by m disjoint copies of EF.

Prove there are segments which are not commeasurable.

To clarify what I want: You may assume the Pythagorean theorem. You may assume any basic number theory. You may talk about the lengths of line segments. (So I am trying to get you to reproduce a proof you have done many times and spell-out its connection with geometry).

B) Two vertices of a triangle are located at (0,6) and (0,12). The area of the triangle is 12 square units. What are all possible positions for the third vertex? How do you know there arent any more vertices that work?

Now a problem about axiomatics. Analyze carefully your answer to the last question and list the assumptions that you are making. I am not asking you to prove if from a specific axiom set but just to reduce your answer to this question to properties that are usually taught in geometry.