

History of Mathematics

Fourth Homework:

Due Monday 12 February 2024.

Math 629

7 February 2024

To hand in: We are using Gradescope for homework submission.

1. Do exercises 5.4.5 and 5.4.6 in Stillwell. The webpage includes some discussion of hyperbolic functions that you will need. (I assume that you know everything about the sine and cosine functions.)
2. Rational triangles. Do the exercises in Stillwell: 5.6.1, 5.6.2, 5.6.3, and 5.6.4.
3. Prove the following generalization of Pythagoras' Theorem: Consider a triangle ABC . Mark points D and E on the side BC so that the angles BAC , ADB , and AEC are congruent as shown below. Prove that $(AB)^2 + (AC)^2 = BC(BD + EC)$. While the result does not need that the angle BAC is obtuse, it helps if we draw it that way (as shown below). It helps to use proportions and similar triangles.

