

Math 1513 - College Algebra

Written Assignment 2 - Due 2011.01.22

Directions: Please answer the following question in complete sentences. Be sure to label all geometric objects in any illustrations. I will accept an answer in a scanned image format, in a Word document or as a pdf.

Question: Due to the work of Albert Einstein and other physicists who laboured on space-time relationships, it is known that the faster an object moves the shorter it appears to become. This phenomenon is modeled by the *Lorentz Transformation*

$$L = L_0 \sqrt{1 - \left(\frac{v}{c}\right)^2},$$

where L_0 is the length of the object at rest, L is the relative length when the object is moving at velocity v , and c is the speed of light. Factor the radicand and use the result to determine the relative length of a 12 inch ruler if it is shot past a stationary observer at 0.75 times the speed of light.