

Physics 495

Homework No. 1

due Wednesday, 2 September, 2009

1. Please do problem 1.2 from Schutz' text, which asks that you get used to the idea of using units where $c = 1$. You might also look at his §1.3.

2. Please do problem 1.5 from Schutz' text, which is asking you to demonstrate that you understand some of the useful features of Minkowski diagrams.

The problem asks that you create Minkowski diagrams (spacetime diagrams). Please use some computer-created graphing program, such as MATLAB or Maple or whatever is your favorite one, to create these diagrams, so that they are neat and accurate. They should also be labeled well enough that the grader can interpret what it is that you have presented.

3. Please do Problem 2.4 from your Rindler's text. This is just to remind you about (more ordinary) Newtonian (or Galilean) relativity.

4. In the early sections of Chapter 2 of Rindler's text, the author is trying very hard to motivate the idea that simultaneity (of two events) is not a statement that two different observers, moving one relative to the other, can agree on. This is a different sort of introduction to the Lorentz transformation equations than I am providing in class, where I basically assume that you have learned these equations earlier in your life. Therefore, please read carefully through the first 6 sections of Chapter 2, and then work out the solution to Problem 2.11.