

# Phys 242 Homework

## Problem Set 2

Due Wednesday, September 6

1. Thornton and Rex 2.41
2. Thornton and Rex 2.42
3. Thornton and Rex 2.95
4. Thornton and Rex 2.100
5. Two relativistic rockets move towards each other. As seen by an observer on earth, rocket A, of proper length 500 m, travels with a speed of  $0.8c$ . As seen by the same observer, rocket B, of proper length 1000m, travels with a speed of  $0.6c$ .
  - a) What is the speed of the rockets relative to each other?
  - b) If the observer on earth sets her clock to  $t=0$  when the the two noses of the rockets pass each other, what will the observer's clock read when the two tails of the rockets pass each other?
  - c) If an observer on rocket A sets his clock to read  $t=0$  when the two noses pass each other, what will his clock read when he passes the tail of rocket B?