

## Module on Special Relativity: Assignment 4

This fourth assignment covers chapters 5, 6, and part of chapter 7 — “trekking through spacetime”, “regions of spacetime”, and “Mom-energy”.

1. Do problem 5-2 on page 164 (the “transforming worldlines” problem).
2. Do problem 5-6 on page 168 (the “midsummer evening’s fantasy” problem).

[I think the authors must have been partaking of too many recreational pharmaceuticals when writing this problem. Never mind. Ignore the silliness and concentrate on the mathematics.]

[The only really tricky bit is drawing the diagram.]

3. Do problem 6-2 on page 184 (the “timelike, lightlike, or spacelike?” problem).
4. Do problem 6-3 on page 184 (the “proper time and proper distance” problem).
5. Do problem 7-2 on page 214 (the “system mass” problem).
6. Do problem 7-4 on page 214 (the “fast protons” problem).  
[This is actually *very* easy if you stop to think about it...]
7. Do problem 7-5 on page 214 (the “Lorentz transformations for mom-energy” problem).
8. Do problem 7-6 on page 215 (the “fast electrons” problem).
9. Do problem 7-8 on page 216 (the “rocket nucleus” problem).
10. Do problem 7-10 on page 216 (the “colliding putty balls” problem).

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