

Physics 2301: Problem Set #6

These problems are due by the morning of Wednesday Feb 27 by upload to Carmen.

1. Shankar, problem 4.3.3 pg. 85.
2. In the course of some physics problem you need this integral:

$$f(\beta) \equiv \int_0^1 \frac{dx}{1 + e^{\beta x}}$$

where β is a small parameter. Find the series for $f(\beta)$ up to and including any β^3 terms.

3. Morin 11.20 (Throwing on a train) p. 553. Just to keep you on your toes, let's change the parameters of the problem so the train moves at $v = \frac{4}{5}c$ while the ball is thrown at $u = \frac{3}{5}c$.
4. Morin 11.32 (Walking on a train) p. 556
5. Morin 11.35 (Photon on a train) p. 556
6. Morin 11.36 (Triplets) p. 557
7. Morin 11.40 (People clapping) p. 558
8. Morin 11.42 (Tunnel fraction) p. 559
9. (BONUS) Morin 11.57 (Bullets on a train)