

Physics 2301: Problem Set #6

These problems are due by the end of Wednesday Feb 26 by upload to Carmen.

1. Shankar, problem 4.3.3 pg. 85.
2. Taking no derivatives, and using only the basic library of series, compute the series (about $x = 0$) for:

$$f_1(x) = \frac{1 + \sin 2x}{1 + \cos 2x}$$

and

$$f_2(x) = \exp(x \cos x)$$

In each case give the terms including order x^3 , and dropping higher order.

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)