

Ph 444 Problem Set 5

Due: Friday, October 15, 2010

1. Ryden problem 5.4.
2. Ryden problem 6.3.
3. In class this week, I presented an interesting derivation for a flat, dust-filled Universe of the proper distance of a photon as a function of time that originates on the current particle horizon.
 - a) Reproduce that derivation in its entirety.
 - b) What is surprising about the photon's proper distance from us for about 30% of its light travel time?
 - c) Comment on how this contrasts with its co-moving coordinate distance.

(Note: this problem will count for DOUBLE the usual point value, i.e. it will be worth 10 points)