Homework 6

AST 422 Spring 2007

last updated: Mar 13, 2007

.

(6.1.optional) Evaluate equation 6.8 for a reasnable matirx of values of Ω_r, Ω_m, and Ω_Λ. ($\kappa = 0$ only, OK) (Can turn this into term project, as long as you turn it into a general paperwith discussion.)

<choice> **You can do either 6.2 or 6.3. Not necessary to do both of them, but you may chose to do so for some extra points.**

(6.2) Show and discuss eq 6.17 & 6.18.
How would you define θ?
Hint: For $\theta \equiv \theta_1$, Try:

(a) $\kappa = +1$
$\cos\theta_0 = (2 - \Omega_0)/\Omega_0$
$\cos\theta_1 = (z + \cos\theta_0)/(1 + z)$

(b) $\kappa = -1$
$\cosh\theta_0 = (2 - \Omega_0)/\Omega_0$
$\cosh\theta_1 = (z + \cosh\theta_0)/(1 + z)$

(6.3) Show and discuss eq 6.20 and 6.21

(6.4.a) Show eq 6.26 (Prefer you do 6.4.b instead...)

(6.4.b) Show eq 6.28 and 6.31 and compute age of universe for WMAP values:
$\Omega_m = 0.27$, $\Omega_\Lambda = 0.73$, $H_0 = 71$

(6.5) Show eq 6.37. (Assume eq 6.37) Then derive eq 6.38–6.40 from this and discuss about eq 6.41 (Handout says 6.40, but Dr. Windhorst's textbook says 6.41...)