March 7, 2004

PHYS 5970 sec. 001 (Cosmology)

Assignment #7
Due 5:00pm Friday March 12, 2004

For a pressure free flat FLRW universe:

1. Compute $R(t, H_0, \Omega_m)$.

2. Plot $R(t, H_0, \Omega_m)$ for $H_0 = 1$, and $\Omega_m = 0.01, 0.1, 0.3, 0.5, 0.7, \text{ and } 0.99$.

3. Compute its current age $t(H_0, \Omega_m)$.

4. Plot $t(H_0, \Omega_m)$ for $H_0 = 1$ and $0 < \Omega_m < 1$.

5. How old is the flat universe if $H_0 = 60 \text{ km/sec/Mpc}$ and $\Omega_m = 0.03$? If $\Omega_m = 0.3$?

6. Compare these ages to the $\Omega_\Lambda = 0$ universe.