ASTRO 220 - Homework 5, Nov 1 2010

due Nov 8

1. Cosmological parameters

Explain, in some detail, what the following parameters are: $H_0, \ \rho_{\rm crit}, \ \Omega_0, \ \Lambda$

2. The hot Big Bang

List and explain four independent pieces of evidence for the Big Bang.

3. Redshift and temperature

a) "The temperature of the microwave background radiation is 2.7 K." Explain what this statement really means (use the word "blackbody").

b) What was the temperature of this radiation at z = 6?

c) Sketch the spectrum of the microwave background at z = 0 and at z = 6.

Label the axes with appropriate tickmarks!

d) What was the matter density of the Universe, in kg/m³, at z = 6?

And, from Universe:

Chapter 26: 6, 7, 9, 15, 18, 24, 42, 44