Physics 139
Spring 2014
Homework 9
Due Friday, April 4, 2014

Reading Assignment: Please read Chapter 11 for qualitative information. The three applications in this chapter are gravitational lensing, accretion disks, and binary pulsars. Apart from some brief comments, I did not lecture on lensing; I did derive the formulas (11.20) and (11.24), concerning accretion disks; and I only made brief mention of binary pulsars, but if you read what is there I think you will find it interesting. I certainly did when I first heard about the work in 1993.

Most of our work this week has been in Chapter 12. Please read Hartle, pp. 255–269; this includes material on gravitational collapse of a spherical cloud of dust, which I will lecture on after spring break, and the redshift, (12.11), which I was in the process of deriving at the end of last Thursday's lecture. I'll finish it when we get back.

1. Problem 12.4, p. 277.

2. Problem 12.6, p. 277.

3. Problem 12.8, p. 277.

4. Problem 12.14, p. 278.

5. Problem 12.15, p. 278.