Physics 355 - Problem Set #10, due Nov 7, 2005

1: 4.3

2: 4.5

3: 4.7

4: Show that

$$\nabla_r^2 = \frac{1}{r^2}\frac{\partial}{\partial r}\left(r^2\frac{\partial}{\partial r}\right)$$

Hint:use a test function $R(r)$ and show that $\nabla^2 R(r) = \frac{1}{r^2}\frac{\partial}{\partial r}\left(r^2\frac{\partial}{\partial r}\right)R(r)$

5: 4.19 (I plan to discuss this problem in class on 11/2)

6: 4.9 (I plan to discuss this problem in class on 11/4)

7: (Optional) 4.8 (I plan to discuss this problem in class on 11/4)