PHYS 301
HOMEWORK #10

Due : 8 April 2016

1. p. 431, 8.156

2. p. 437, 8.170

3. p. 444, 8.188

4. If **r** is the position vector, verify that $\nabla \cdot \mathbf{r} = 3$ by using the spherical polar coordinate system.

5. Laplace' s equation, very commonly used in many areas of physics, is :

$$\nabla^2 V = 0$$

where V is some scalar potential. Suppose the potential function depends only on r and has the form:

$$V = c\, r^n$$

where c is a constant. For what values of n will V satisfy Laplace's equation?

6. p. 657, 12.16