Homework #5

Due at 6pm on Friday, February 27th, 2015

Reading: Chap 25.

1. HRW Chap 24, Question 5.

2. Two uniformly charged, infinite, nonconducting planes are parallel to a yz plane and positioned at $x = -50$ cm and $x + 50$ cm. The charge densities on the planes are $-50nC/m^2$ and $+25nC/m^2$, respectively. What is the magnitude of the potential difference between the origin and the point on the x axis at $x = +80$ cm? [Hint: Use Gauss law.]

3. HRW Chap 24, P28.
4. HRW Chap 24, P31.
5. HRW Chap 24, P33.

6. What is the magnitude of the electric field at the point $(2\hat{x} + 3\hat{y} + 4\hat{z})$ m if the electric potential in the region is given by $V = 2xyz^2$, where V is in volts and coordinates x, y, and z are in meters?

7. HRW Chap 24, P40.