ECE 09.303 Fall 2018
Homework 4
Chapter 4/22 – Electric Potential

1.

An electron passes point A moving at 6.5 Mm/s. At point B it comes to a stop. Find the potential difference ΔV_{AB}.

2.

Find the potential as a function of position in the electric field $\vec{E} = ax\hat{\imath}$, where a is a constant and where you're taking $V = 0$ at $x = 0$.

3.

The electric potential in a region is given by $V = -V_0(r/R)$, where V_0 and R are constants and r is the radial distance from the origin. Find expressions for the magnitude and direction of the electric field in this region.

4.

A 2.0-cm-radius metal sphere carries 75 nC and is surrounded by a concentric spherical conducting shell of radius 10 cm carrying −75 nC. (a) Find the potential difference between shell and sphere. (b) How would your answer change if the shell's charge were +150 nC?