

Homework 18 for September 26 2008

Due 8AM on September 30 2008

Physics 221 with Professor Jeff Terry

1. Over a certain region of space, the electric potential is $V=5x-3x^2y+2yz^2$. Find the electric field in this region.
2. A point charge q is located at $x=-R$ and a point charge $-2q$ is located at the origin. Give all points where the electric potential is zero.
3. An electron is initially a distance $r=4.3 \times 10^{-9}$ m from a proton, travelling directly away from the proton at a speed 4×10^5 m/s. What is the speed of the electron when it is very far from the proton?
4. How much charge is on each plate of a $4 \mu F$ capacitor when it is connected to a 12V battery?