1) Draw the electric field lines and equipotential lines for an isolated negative point charge.

**Electric field lines point inward toward the negative charge**

**Equipotential lines are concentric circles (spheres in 3-D)**

Spacing should increase outward from charge for uniform voltages (eg. 1V, 2V, 3V ...)

2) If an electron moves from one point at a potential of 100.0 V to another point at a potential of 200.0 V,
   a) For the electric field shown, indicate the direction of motion for the electron and label the dashed equipotential lines shown.
   b) How much work is done by the electric field? Is it positive or negative? Why?
   c) What is the change in potential energy of the electron? Is it positive or negative? Why?

\[ W = q\Delta V = (1.6 \times 10^{-19})(200 - 100) \]
\[ W = 1.6 \times 10^{-17} \text{ J} \]

It’s positive work because the electron moves toward smaller potential energy.

\[ \Delta U = -W = -1.6 \times 10^{-17} \text{ J} \]

It’s a negative because the electron moves toward smaller potential energy.

Higher potential is ALWAYS toward the positive plate, toward higher potential energy for a + charge.