PHY3323: ELECTROMAGNETISM I

Problem set II (due Nov. 26, 2008)

PROBLEM 1

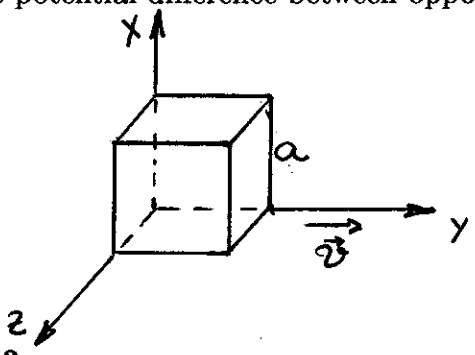
Problem 5.1 from the text book.

PROBLEM 2

A metal cube of length a is moving in the $\vec{y}$ direction through a uniform magnetic field $\vec{B} = B_0\hat{z}$.

(a) Find the induced electric field in the cube.

(b) Find the potential difference between opposite sides of the cube.



PROBLEM 3

The wire loop shown in the figure below carries a current I and consists of two circular arcs (radii a and b, and a central angle $\pi/2$), and two straight sections whose extensions cross at the center of the arcs, C. What magnetic field $\vec{B}$ does the current produce at point C?