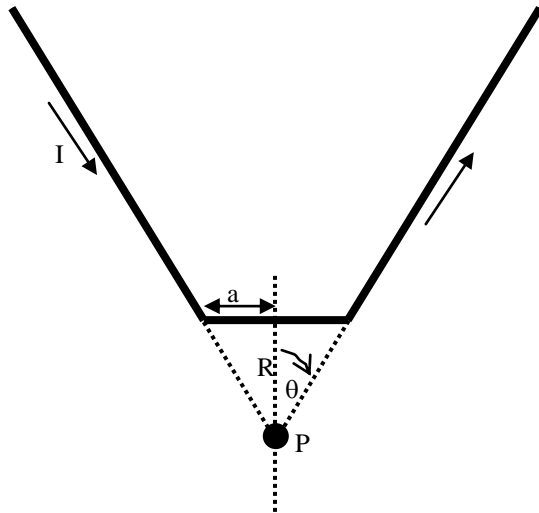# Physics 142 – Fall 2010 – Workshop module 8

1.  A rigid, circular loop of radius R and mass M carries a current I and lies in the xy plane on a rough, flat table. There is a horizontal magnetic field of magnitude B. What is the minimum value of B such that one edge of the loop will lift off the table?

2.  Find the magnetic field at the point P due to the current I.



3.  In most parts of the northern hemisphere the earth's magnetic field has a vertical component directed into the earth. An airplane flying east generates an emf between its wingtips. Which wingtip acquires an excess of electrons, and which a deficiency? Explain.

4.  Find the magnetic field at the point P due to the current I.
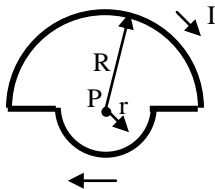


5.  A conductor is made in the form of a hollow cylinder with inner and outer radii a and b, respectively. It carries a current I, uniformly distributed over its cross section. Derive expressions for the magnitude of the magnetic field in the regions a) r<a; b) a<r<b; c) r>b.

6.  Two closely wound circular coils have the same number of turns, but one has twice the radius of the other. How are the self-inductances of the two coils related?