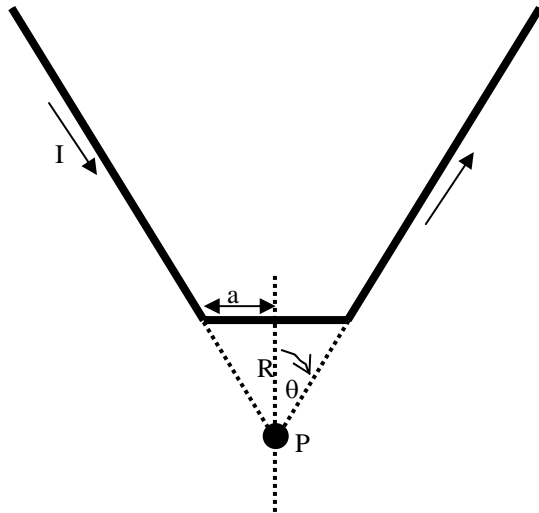
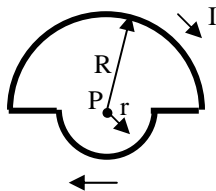


Physics 142 – Fall 2007 – Workshop module 8

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) $r > b$.