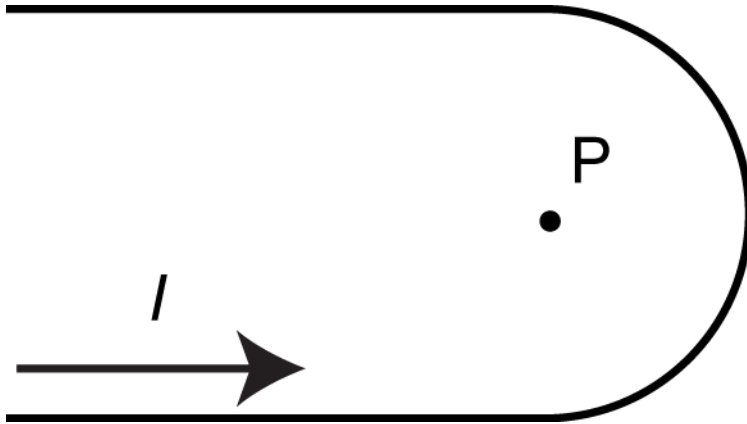


Homework 9
Due November 6, 2009

272:

1.- A long wire is bent into the hairpin-like shape shown in the figure. Find an exact expression for the magnetic field produced by a current I on the wire at the point P, which lies at the center of the half circle of radius R .



272H (the previous problem and the following):

2.- You want to make a very uniform magnetic field region. You use two coils of radius R . Find the separation S of the coils that gives you the most uniform magnetic field. Find how much error you can tolerate on the separation such that the uniformity along the axis starting at the center of symmetry is better than 10% when you have moved by $1/2R$. (This arrangement is the Helmholtz configuration of two coils)