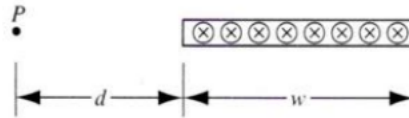Name: _____ , Section: ___

Problem – (P33.8)   A thin plastic disk of radius R has a charge q uniformly distributed over its surface. If the disk rotates at an angular frequency ω about its axis, show that the magnetic field at the center of the disk is

$$B = \frac{\mu_0 \omega q}{2\pi R}.$$

(Hint: The rotating disk is equivalent to an array of current loops.)

Solution:

Problem – (P33.8)   The figure below shows a cross section of a long, thin ribbon of width w that is carrying a uniformly distributed total current i into the page. Calculate the magnitude and direction of the magnetic field $\vec{B}$ at a point P in the plane of the ribbon at a distance d from its edge. (Hint: Imagine the ribbon to be constructed from many long, thin, parallel wires.)

Solution: