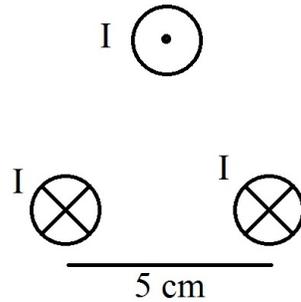


## PHYS 212 Homework Assignment

Chapters 12

**Problem 1** The figure below is a cross section of three very long wires with linear mass density of 50 g/m. They each carry an equal amount of current,  $I$ , in the directions that are shown. The lower two wires are 5.0 cm apart and being held stationary. What current will allow the top wire to “float” such that it forms an equilateral triangle with the other two wires?



**Problem 2** A wire of radius  $R$  has a uniform current density of  $J$  flowing through it. What is the magnetic field inside the wire ( $r \leq R$ ) and outside the wire ( $r \geq R$ )?

**Problem 3** A solenoid with 10 coils per centimeter has a current of 2 Amps flowing through it. Use Ampere’s law to find the magnetic field inside the solenoid.

**Problem 4** One book problem of your choice from chapter 29. (Make it interesting!)