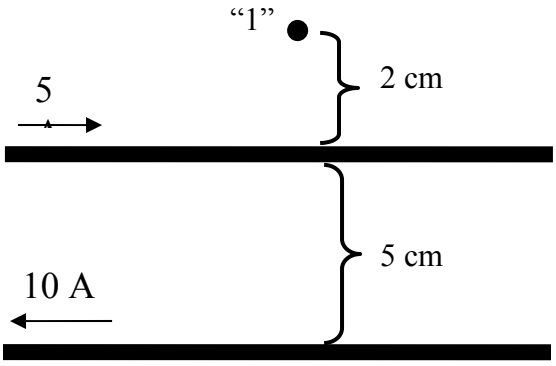
Physics 2212
HW 6 (due: April 11)

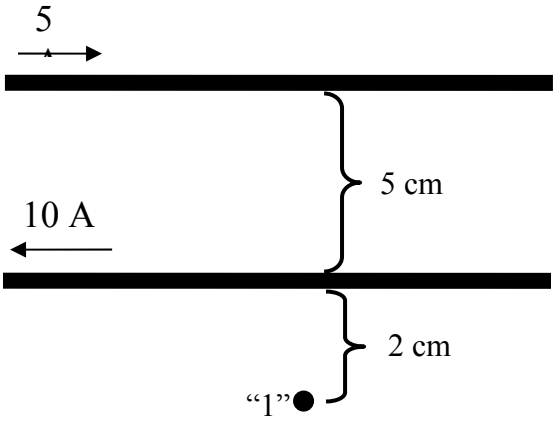
1. The magnetic field at the center of a 1.0-cm-diameter loop is 6 mT. What is the current in the loop?

2. Two concentric current loops lie in the same plane. The smaller loop has a radius of 3.0 cm and a current of 12 A. The bigger loop has a current of 20 A. The magnetic field at the center of the loops is found to be zero. What is the radius of the bigger loop?

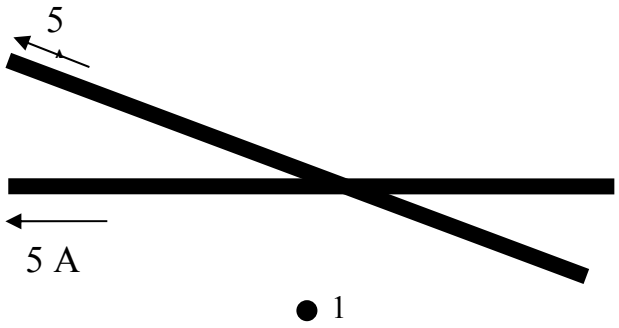
3. What are the magnetic field strength and its direction at point 1 shown in the figure?



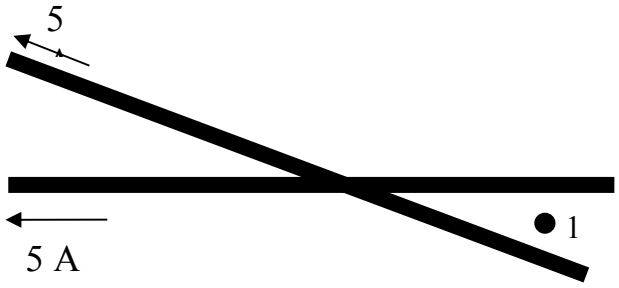
4. What are the magnetic field strength and its direction at point 1 shown in the figure?



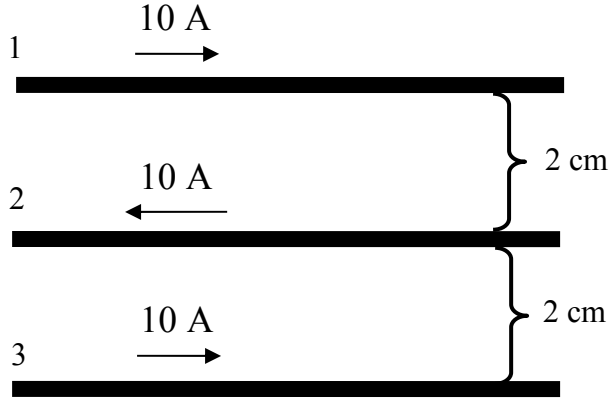
5. The two insulated wires in the figure cross at a 30^0 angle but do not make electrical contact. Each wire carries a 5.0 A current. Points 1 is 4.0 cm from the intersection and equally distant from both wires. What are the magnitude and the direction of the magnetic field at point 1?



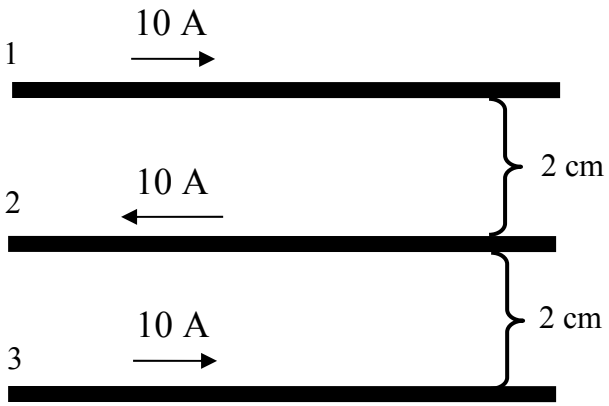
6. The two insulated wires in the figure cross at a 30^0 angle but do not make electrical contact. Each wire carries a 5.0 A current. Points 1 is 4.0 cm from the intersection and equally distant from both wires. What are the magnitude and the direction of the magnetic field at point 1?



7. What is the net force on wire number 3 shown in the figure?



8. What is the net force on wire number 2 shown in the figure?



9. Find the magnitude of the magnetic field at point P. Point P is the center of all three loops.