IB Physics
FA 20.3 - Ampere's law

Name_____

Favorite Orchestra_____

Show your work, circle your answers, and use sig figs to receive full credit.

1. What is the magnetic field 3.50 cm to the left of a long straight in the plane of the page wire carrying 120. A straight up the page? (6.86×10^{-4} T out of the page)

2. There is a magnetic field of 8.20×10^{-5} T into the page 12.0 cm to the right of a long straight wire that runs up and down the page. What is the current flowing in the wire, and does it flow up or down the page?
(49.2 A up the page)

3. Two straight wires are parallel for 3.40 m at a distance from each other of 15.0 cm. The leftmost has a current of 12.0 A flowing up the page, and the rightmost, a current of 18.0 A flowing down the page. What is the force on the leftmost wire? On the back of this sheet write the complete definition of the Ampere
(9.79×10^{-4} N to the left)

4. A narrow solenoid is 14.0 cm long and has 112 windings. What is the magnetic field inside if it carries 2.30 A of current? (0.00231 T)

5. One of my solenoids is 2.70 cm long, and has 50.0 windings. What current must flow in the wires if we want to create a magnetic field of 1.00 Tesla? (solenoids with iron cores would require much less current)
(430. A)