Physics 12: Electromagnetism 2 - Fields Produced by Moving Charges

1. Two long straight wires are arranged parallel to one another as shown below. Find the magnetic field at points A and B.

 **A**

 0.10m

 4.0A

 0.12m 0.16m

 **B**

 2.0A

2. Find the force acting on a 2.0m segment of each wire in question 1. (Due to the magnetic field created by the other wire).

3. A solenoid consists of 400 turns of wire and has a length of 20.0cm. The total resistance of the solenoid is 2.00Ω. If the solenoid is connected to a 6.0V power source find the strength of the magnetic field at the centre of the solenoid.

4. If the two solenoids shown are arranged as shown. Do the solenoids attract or repel?

**5.** Two long straight wires are arranged as shown below. At their closest the two are separated by 20.0cm. What is the magnetic field (magnitude and direction) at a point midway between their closest position?

 20.0A

 10.0cm

 10.0cm

 5.0A

**6.** Three long straight wires are arranged as shown below. Find the net magnetic field at point P.

 4.0A

 5.0cm 5.0cm

 P

 2.0A 3.0cm 3.0cm 3.0A