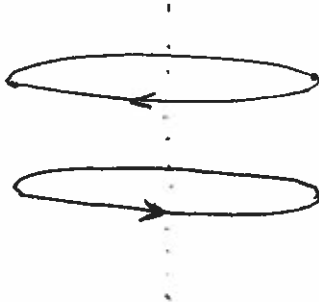


Physics 2611: General Physics II

NAME: _____

Midterm II

- 1) Draw the magnetic field lines produced by the two current carrying loops shown.

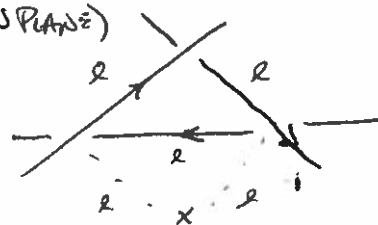


- 2) Determine the magnitude of the field AND DIRECTION at the point indicated by 'x'

a)

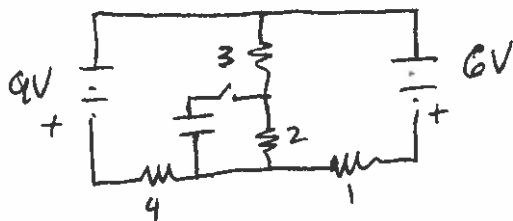


b) (ALL WIRES IN PLANE)

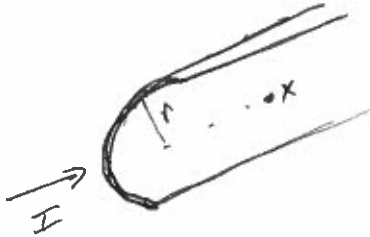


- 3) For the circuit shown, determine,

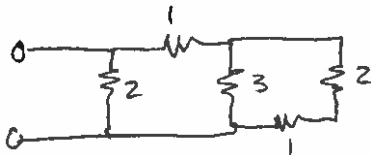
- The current flowing through the 2Ω resistor before the switch is closed.
- Just after the switch is closed (capacitor initially no charge) what is the voltage across the 4Ω resistor.
- After closure, and waiting a long time, what is the power dissipated in the 1Ω resistor.



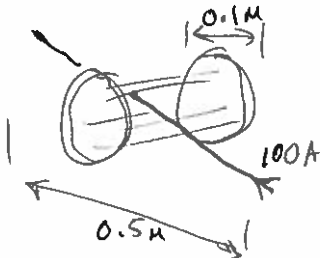
- 4) A long metal half pipe as shown has radius r and carries a total current I . Derive a formula for the magnitude of the magnetic field along the center of the pipe. Which way does it point.



- 5)(a) Determine the equivalent resistance of the circuit shown.



- (b) A 0.5m long wire cut through the space between a 0.1m diameter pole piece. Carrying 100 amps into the page, it feels a force of 1.4 Newtons down. Determine the magnitude and direction of the field between the pole pieces.



EXTRA CREDIT: A 10 volt battery is hooked up to the circuit shown in problem 5a. What is the power dissipated by the 3Ω resistor.

- b) If in (4) the pipe was a complete pipe carrying current $2I$, what would be $\vec{B}$ @ the centerline of the pipe?