PHYS 202 Ampere’s Law Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For any current geometry that produces a magnetic field that does not change in time,



where  is a small segment of length along a closed path of arbitrary shape around the current.

1. Using Ampere’s law, show that the magnitude of the magnetic field (B) due to a long straight wire, carrying a current I, at a distance r, is given by: $B=\frac{μ\_{0}I}{2πr}$ (μ0= 4πx10-7 T.m/A)



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2. Describe three properties of the above magnetic field.

3. Two long straight wires, carrying currents 9.00A and 5.00A are separated by a distance of 0.120 m, lie in a plane as shown below. Determine the net magnetic field (magnitude and direction) from both currents at points A, B, and C? [C is midway between the currents]

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