

Name \_\_\_\_\_ Instructor name \_\_\_\_\_

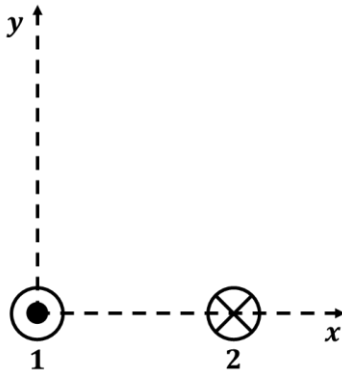
**You must show and explain all work neat and organized to receive credit. Please show each step for calculations. YOU MUST TURN IN THIS SHEET to have your assignment graded.**

1. The figure shows an end view of two wires carrying current.

⊗ means that the direction of the current points into the page, and

⊙ means out of the page.

What is the direction of the force that *wire 1* exerts on *wire 2*? Please provide a detailed explanation. (5 pts)



2. Refer to the figure in question 1. Is the direction of the magnetic field around wire 1 clockwise or counterclockwise? (5 pts)

3. Two wires carrying equal currents exert a force  $\mathbf{F}_0$  on each other. (a) The current in each wire is doubled, while the separation distance remains constant. What is the magnitude of the force,  $\mathbf{F}'$ , in terms of  $\mathbf{F}_0$ , that one wire exerts on the other? Please show detailed calculations. (b) When a magnetic field is parallel to a current-carrying wire, what is the force on the wire? (10 pts)