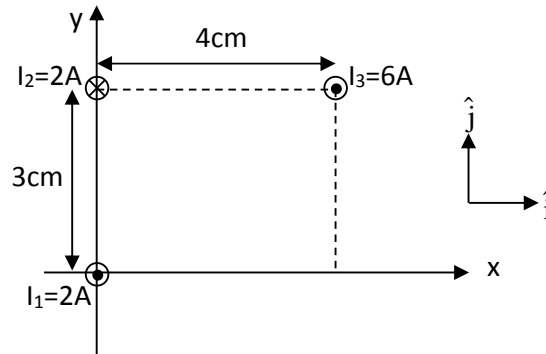


Name: \_\_\_\_\_

PHY 232 Summer 2016 Class Work

Class 30. Ampere's Law

Consider three infinite long wires parallel to each other:



(a) What is the magnetic force per unit length acting on  $I_1$  due to  $I_2$ ? Please use  $\hat{i}, \hat{j}, \hat{k}$  notation.

(b) What is the magnetic force per unit length acting on  $I_1$  due to  $I_3$ ? Please use  $\hat{i}, \hat{j}, \hat{k}$  notation.

(c) What is the total magnetic force per unit length acting on  $I_1$ ? Please use  $\hat{i}, \hat{j}, \hat{k}$  notation.

(d) What is the magnitude of the total magnetic force per unit length acting on  $I_1$ ? What is its direction (with respect to the +x axis)?