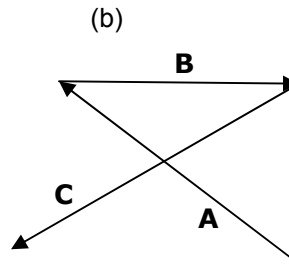
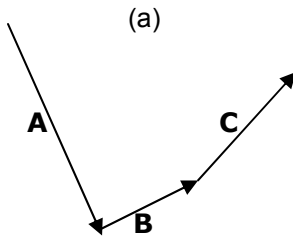


Name: \_\_\_\_\_ Lab Section: \_\_\_\_\_ Date: \_\_\_\_\_

### PreLab: A Study of Concurrent Co-planar Forces

**Instructions:** Prepare for this lab activity by answering the questions below. Note that this is a **PreLab**. It must be turned in at the start of the lab period. Time cannot be given in lab to perform PreLab activities. After the start of lab activities, PreLabs cannot be accepted. Explain your answers. Points will be taken off if your work is not neat and well organized.

- (2 points) Two vectors, **A** and **B**, are added by means of vector addition to give a resultant vector **R**:  $\mathbf{R} = \mathbf{A} + \mathbf{B}$ . The magnitudes of **A** and **B** are 5.7 m and 7.3 m, respectively, and they can have any orientation. What are the maximum and minimum possible values for the magnitude of **R**?
- (2 points) During a relay race, runner A runs a certain distance and then hands off the baton to runner B, who runs a certain distance and hands off the baton to runner C, who runs a certain distance. In the two cases below, graphically add the three displacement vectors **A**, **B** and **C** together and draw the resultant vector **R**.



- (11 points 1408/9 points 1420) Given the vectors below, determine the resultant and the equilibrant using trigonometry. Show all your steps.  
217.0 newtons @ 130 degrees  
158.0 newtons @ 45.0 degrees

- (1420 ONLY 2 points) Find the first derivative of  $f(x) = 6x^3 + 4x^2 - 3/x + \sin x$