Week 2 Recitation Quiz

Part 1: Work on this question by yourself using this sheet of paper. You will have approximately 20 minutes to write your solution of this question. Please show all of your work. The solution process is MUCH more important than the final answer! Any numerical answer will usually be worth at most 10% of the total points.

1) Which of the following quantities are scalars?

   □ (a) Position

   □ (b) Displacement

   □ (c) Change in position vector

   □ (d) Speed

   □ (e) Distance

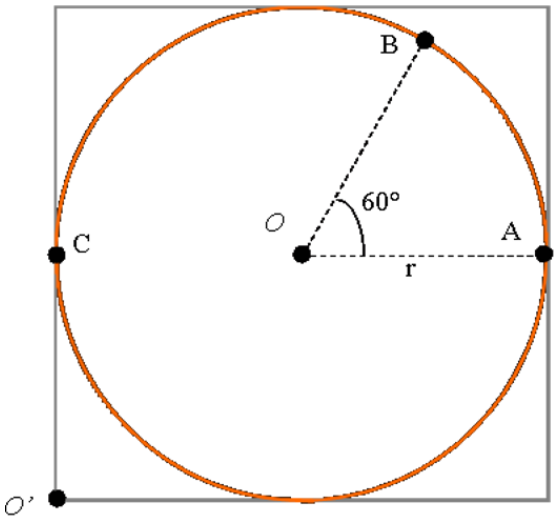
   □ (f) Acceleration

   □ (g) Magnitude of acceleration

2) The following are questions about the diagram pictured. Vectors can be expressed as the x and y components placed inside brackets. (example: **< x , y >**)

   (a) Find the position vector, as a function of the radius (variable **r**), for points **A**, **B**, and **C**, using origin ***O*** at the center of the circle.

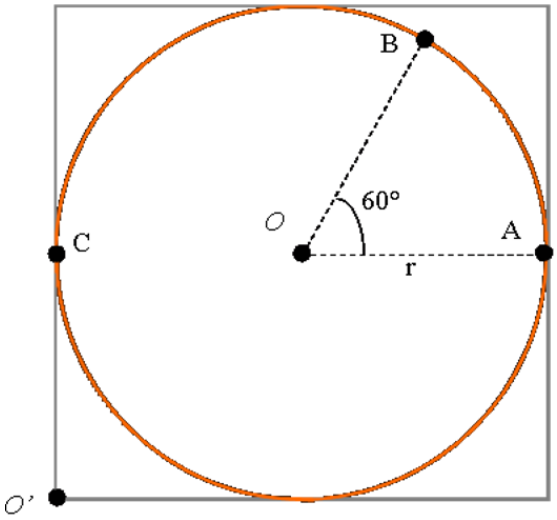
   (b) Find the change in position vector from **A** to **B** and **B** to **C** using origin ***O***. Again, express these in terms of the radius.



Week 2 Recitation Quiz

Part 2: Work on this question in groups using a whiteboard and markers. Your group will have approximately 20 minutes to write your solution of this question. Please show all of your work. The solution process is MUCH more important than the final answer! Any numerical answer will usually be worth at most 10% of the total points.

2) Use the diagram to answer the following questions. Some of these questions may be similar to the individual questions. Make sure your group works together and gives everybody a turn at writing a piece of the solution.



(a) Find the position vector, as a function of the radius (variable **r**), for points **A**, **B**, and **C**, using origin ***O***.

(b) Find the change in position vector from **A** to **B** and **B** to **C** using origin ***O***. Again, express these in terms of the radius.

(c) Repeat parts (a) and (b) using origin ***O'***.

(d) Do the position vectors depend on the choice of origin? Explain.

(e) Do the change in position vectors depend on the choice of origin? Explain using the *Self-Consistency* sensemaking technique.