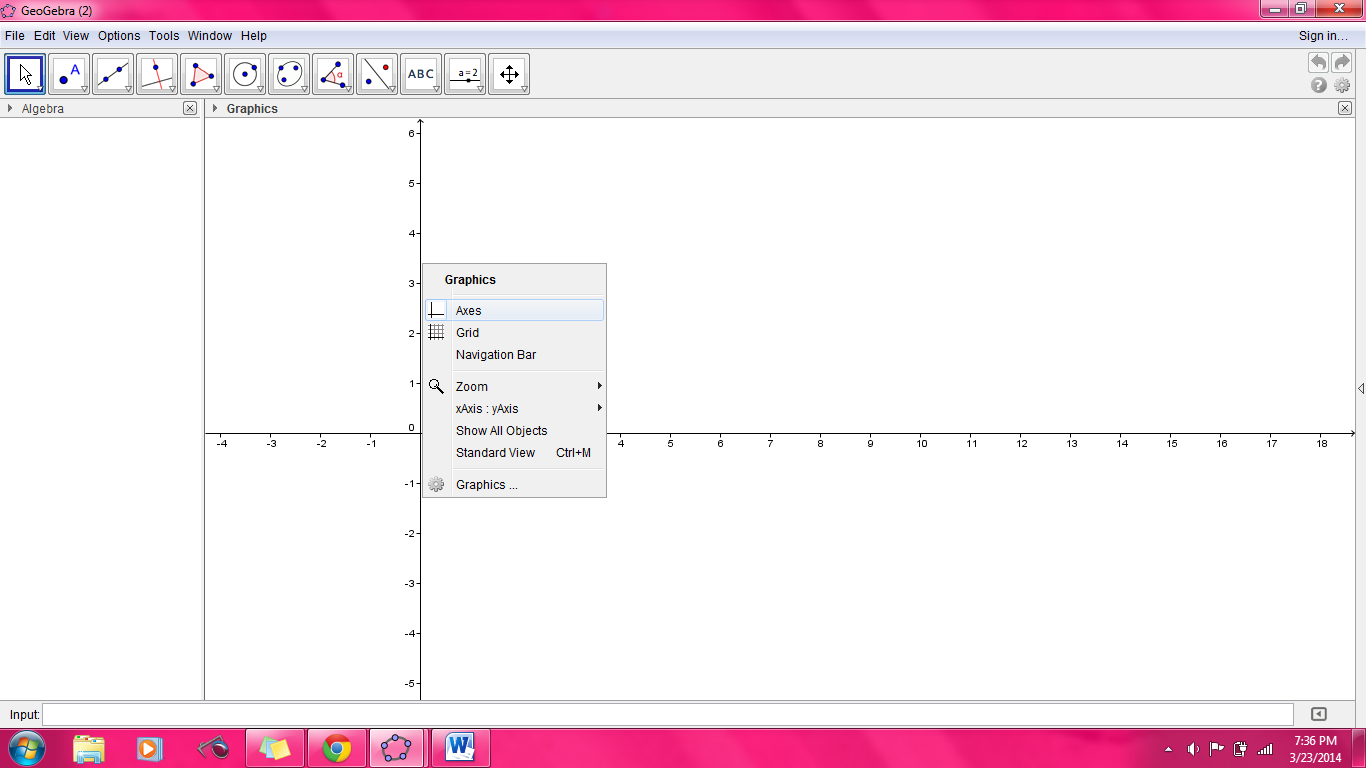
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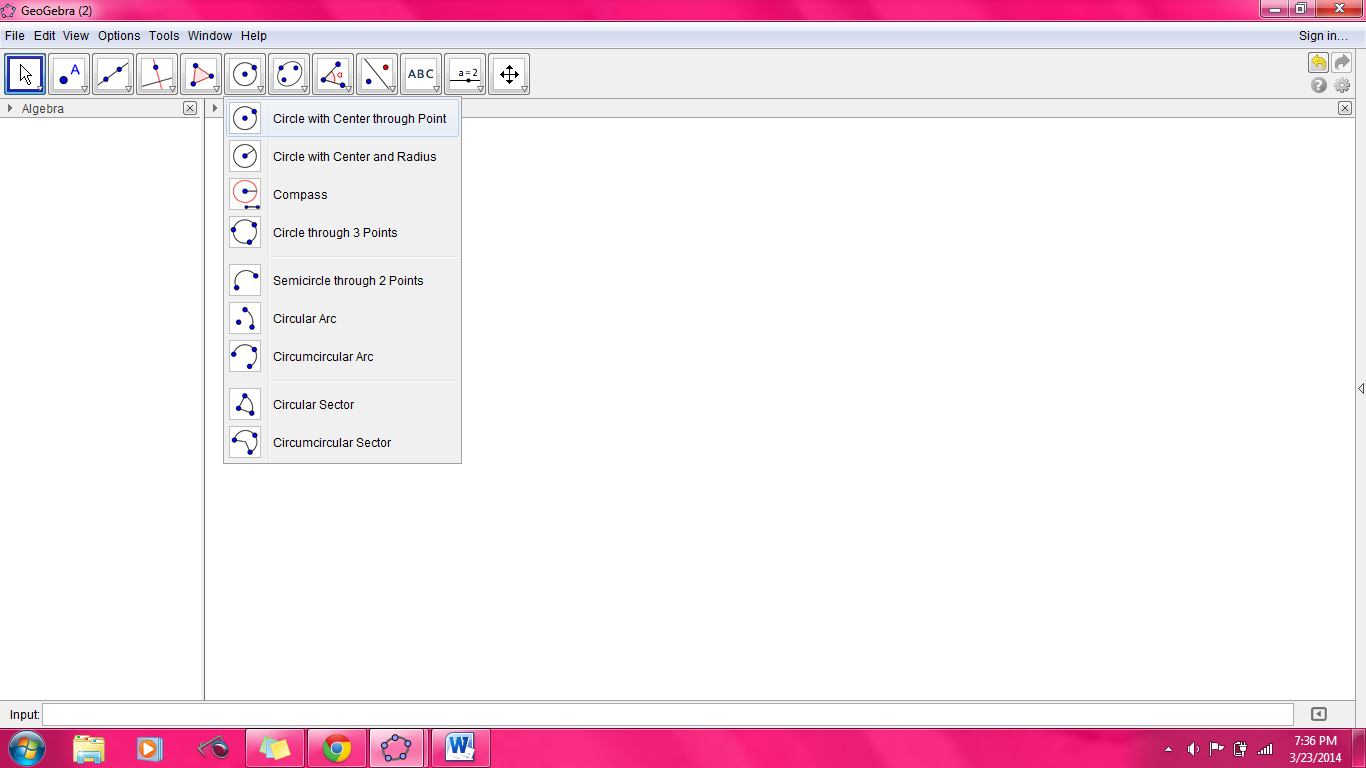
**Tangents From a Point Outside the Circle & Its Angle That is Formed**

*A tangent is a line that touches a curve at one point without intersecting*

1. Right click the screen and click on **AXES** to create a blank page.

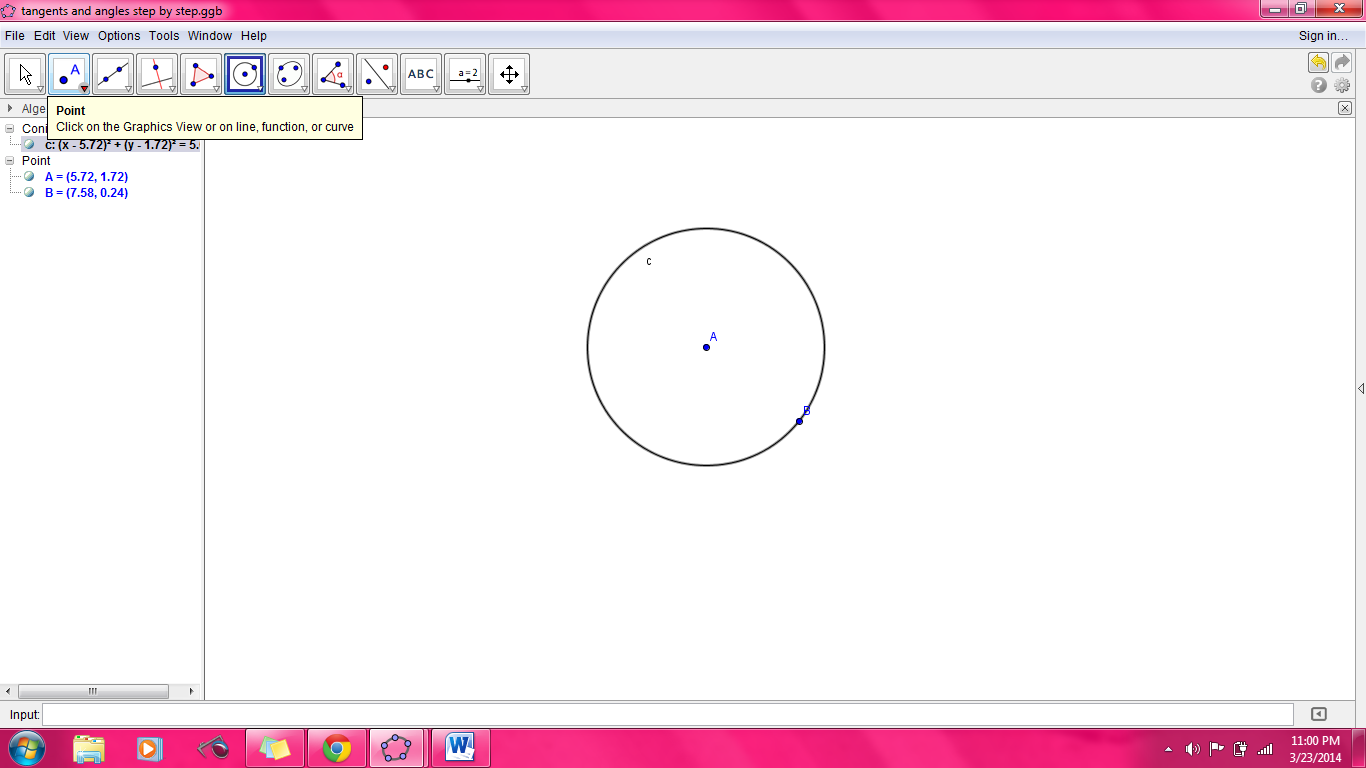


1. Construct a circle:

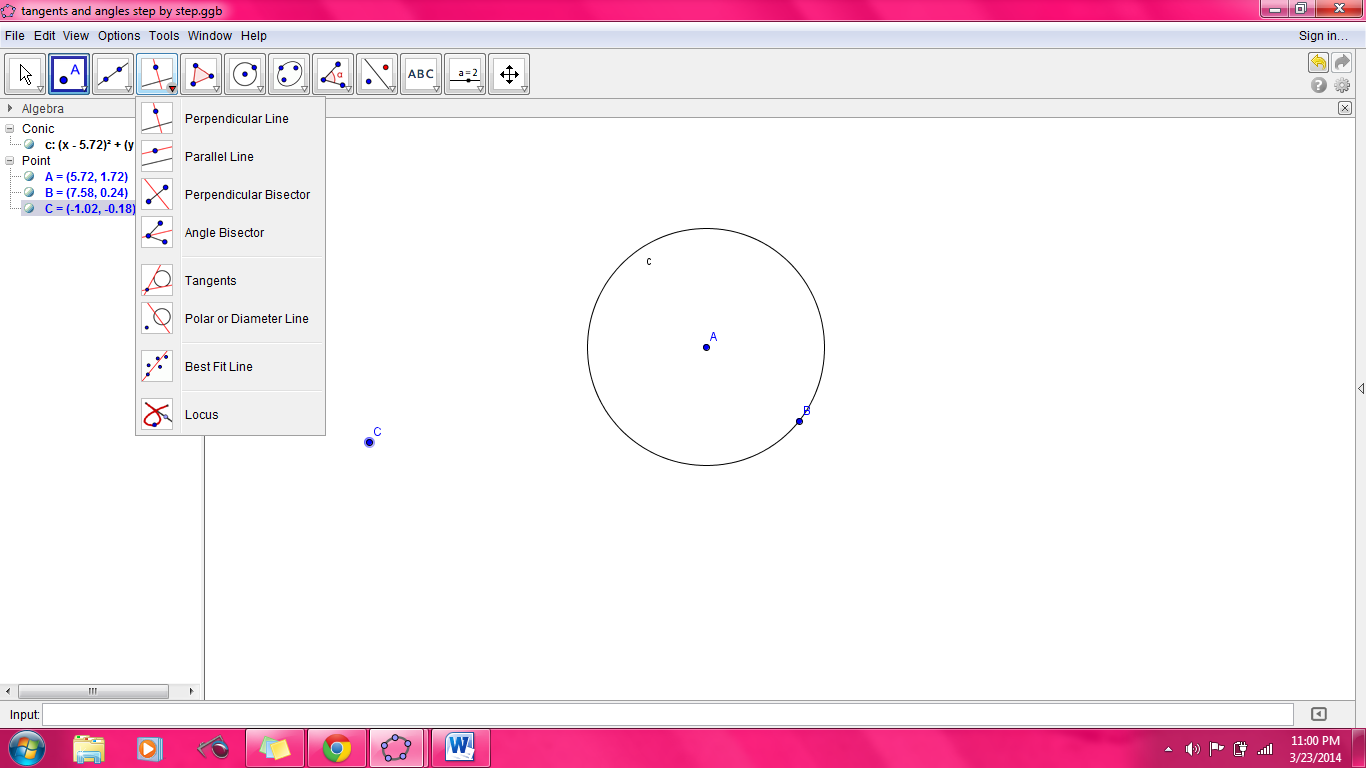


* 1. Click on **CIRCLE WITH CENTER THROUGH POINT** and create point.
  2. Move cursor to desired size of circle and click again.

1. Point Outside the Circle:



* 1. Choose **POINT** and place anywhere outside of the circle.

1. Tangents
   1. Choose **TANGENTS** and then click on point followed by clicking on the circle.

* Are the tangents equal in length? Why?

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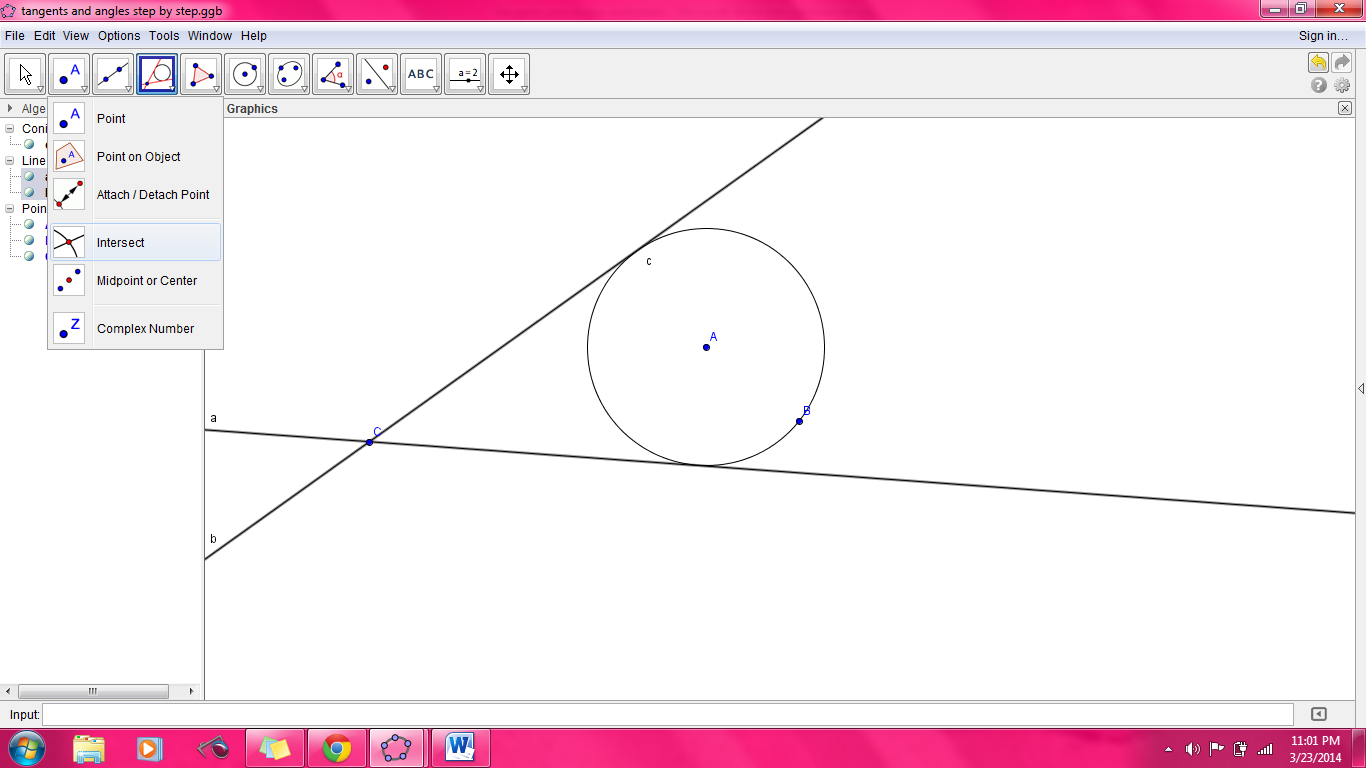
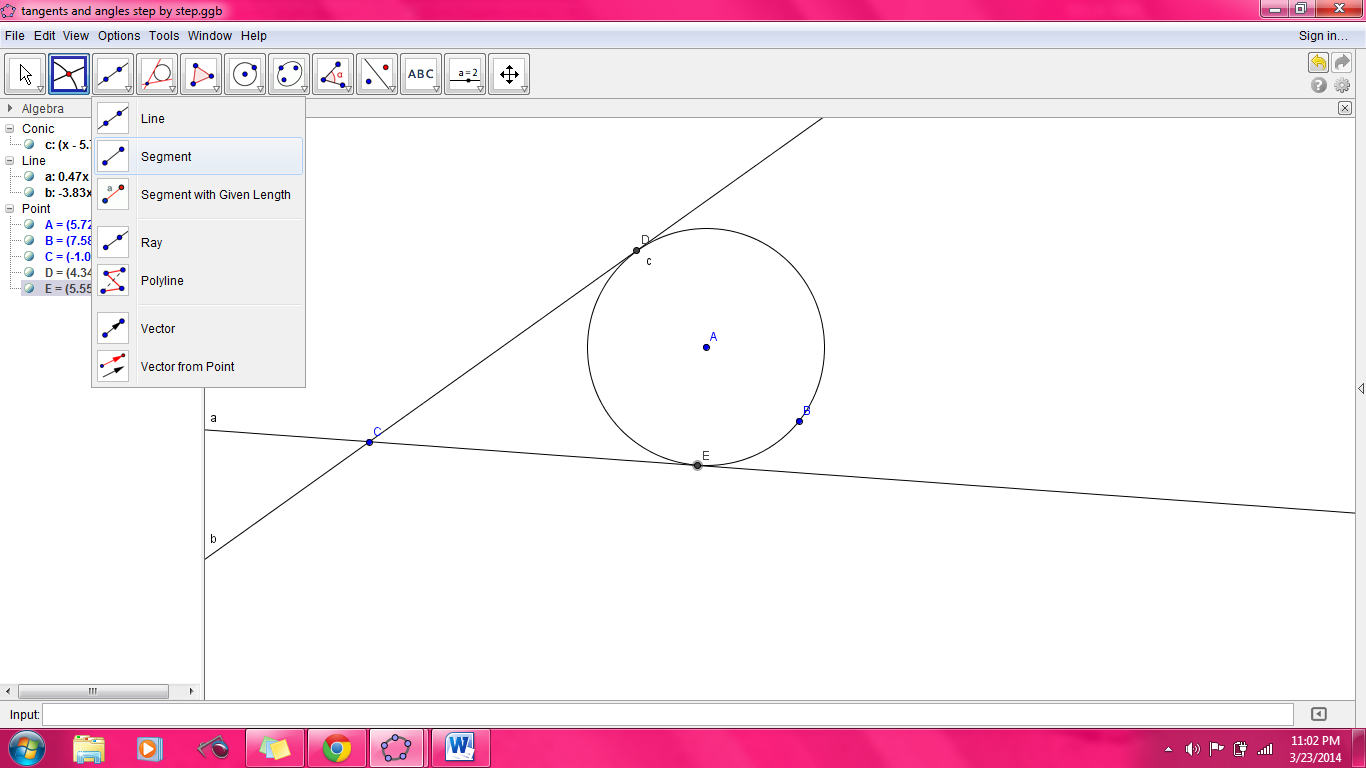
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* How can we show that they are equal?

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1. Intersections and Segments:



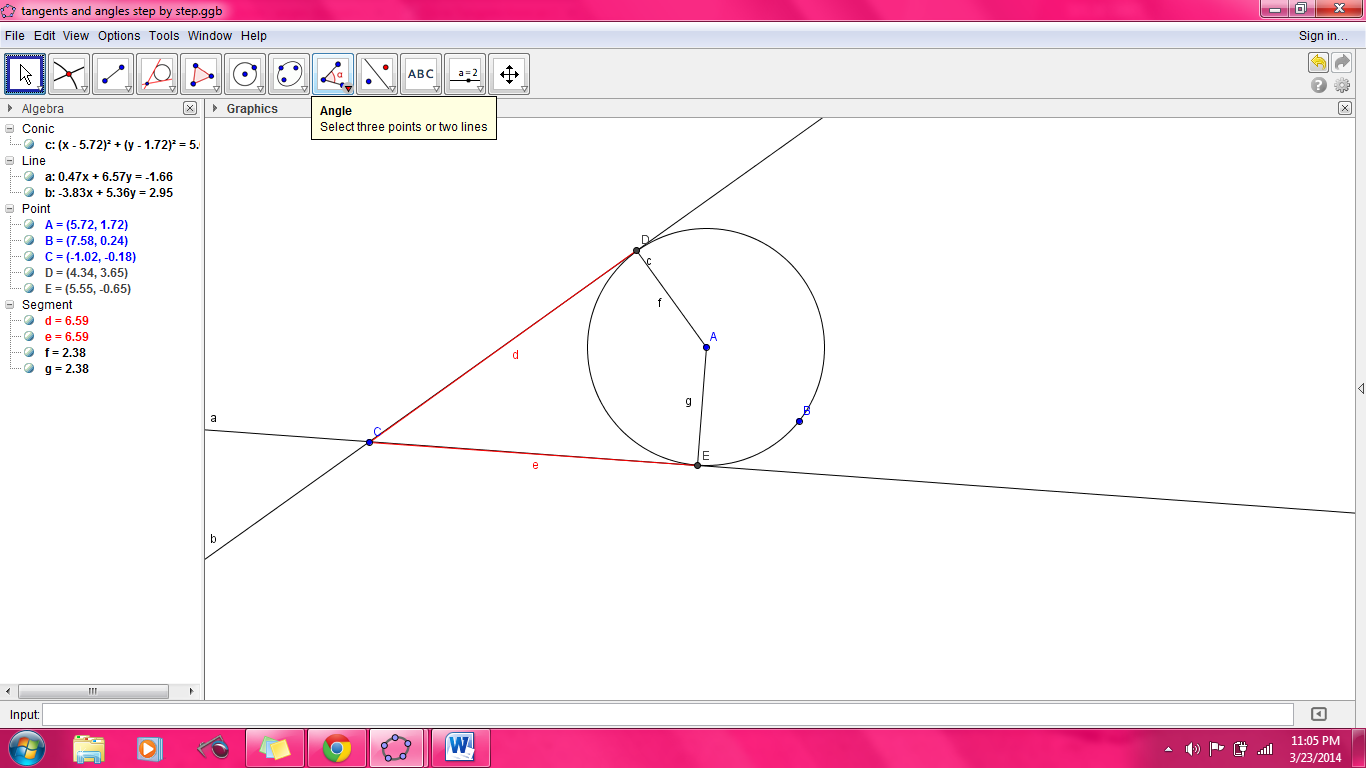
* 1. Choose **INTERSECT** and then click where each tangent intersects the circle
  2. Choose **SEGMENT** and then create two segments from point outside the circle to each intersection. Also create two segments from Point D to A and Point A to E.
* Are they equal in length now? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Do they remain equal if you move the point outside the circle around? Try it out!

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**Measures of Arcs**

1. Choose ANGLE and find . Move the outside point around and note what happens.



* What is the relationship between

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* What about the relationship for all three of the angles?

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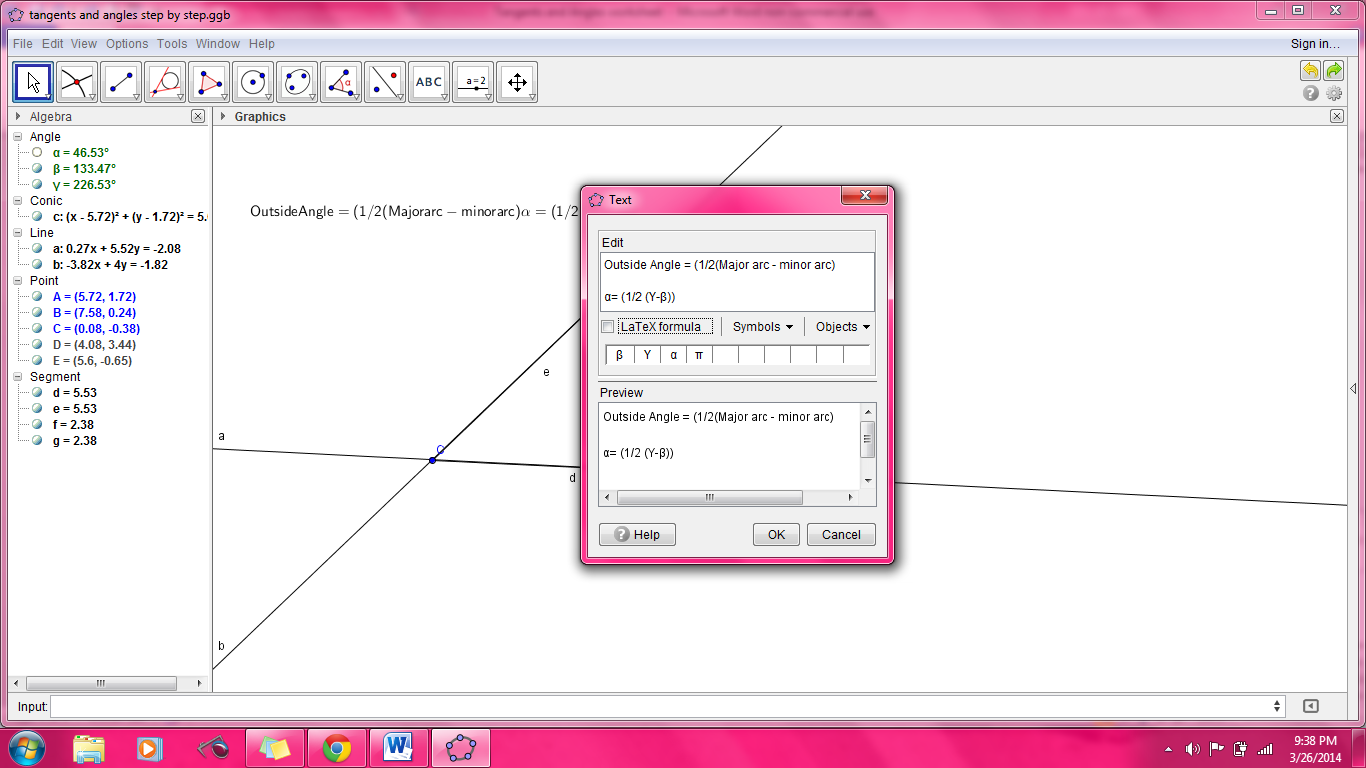
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What can we now always conclude?

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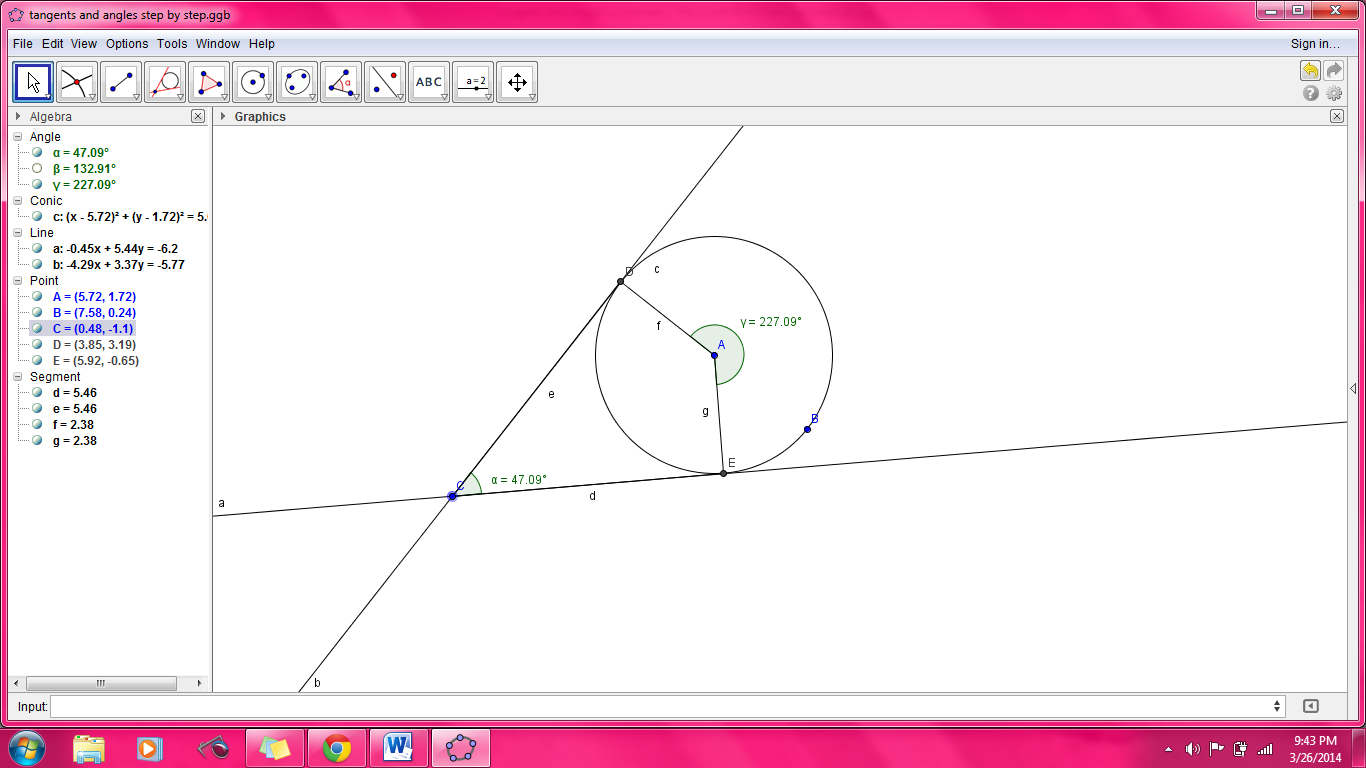
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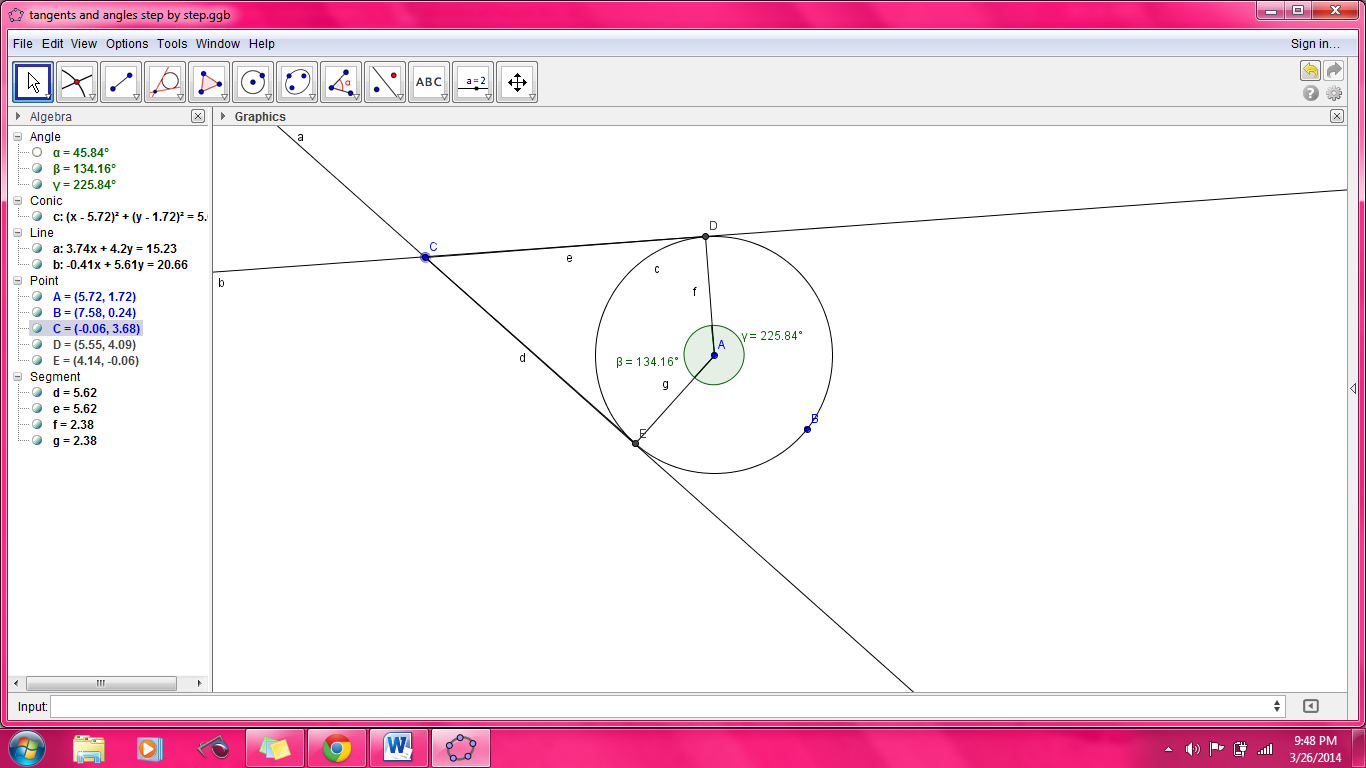


1. Insert text box to show formulas used to find the measure of the outside angle.
   1. Use SYMBOLS if using Greek letters
   2. Click LaTex Formula to write it as an equation



Example Problems:





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<http://www.regentsprep.org/Regents/math/geometry/GP15/CircleAngles.htm>