On Geogebra

1. Create a circle with centre at the origin (called **A**) and radius 1 (where a point **B** is on the circumference at [1,0])

2. Add a number slider **a** ranging from min 2 to max 26

3. Type (a,0) into the input bar at the bottom of the screen to place a point **C** with coordinates (a,0) .

4. Generate an arc **d** going through two points A and C (in the drop down menu 6th tool option from the left)
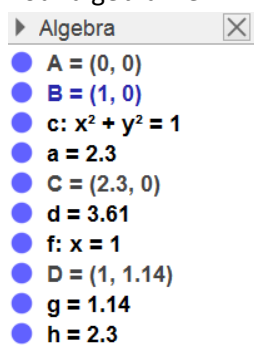
5. Make a line **e** perpendicular to the x-axis going through **B**

6. At the intersection of this arc and this new line, add a point **D**

7. Join B and D together using the segment tool from the 3rd drop down menu from the left.

8. Then join A and C together

9. Your algebra view will look something like this

▶ Algebra ✕
● A = (0, 0)
● B = (1, 0)
● c: x² + y² = 1
● a = 2.3
● C = (2.3, 0)
● d = 3.61
● f: x = 1
● D = (1, 1.14)
● g = 1.14
● h = 2.3

You can click on the blue circles to hide objects. Hide the circle c, and hide the line f.

10. Click on the the length tool and click on B then D. The length of this segment (1) should appear.

11. Then measure the length BC. This should also be 1.

12. You can now use the move tool to adjust the slider so that you can see how BD changes as you change the diameter of the semicircle. What do you notice?