Assignment 7

Junaid Ahmad Bhat

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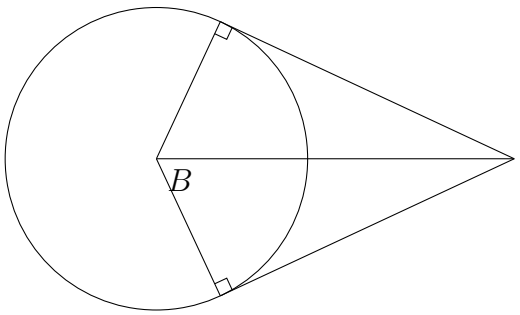
Question

Draw a circle with centre B and radius 6. If C be a point 10 units away from its centre, construct the pair of tangents AC and CD to the circle.

Solution



Rough sketch with O as origin

TO draw the circle and the tangents to the given circle with radius = 6,we need to find the coordinates of points of intersection of tangents

Procedure is given below:

1.First, draw a given circle with B(0,0) as centre and radius = 6.

2.Now,We have to draw a circle with B and given external point C as diameter.

3.Coordinates of C are(10,0) as it is 10 units from centre of given circle

4.Therefore,center of circle mentioned in step 2 is S(5,0) and radius = 5 ,draw it.

5.Now,we have two known circles with known centres and known radius.

6.Writing equations of above two circles in standard form

C1:$x^2 + y^2 = 36$ (centre B(0,0),radius = 6) (1)

C2:$(x-5)^2 + y^2 = 25$ (centre S(5,0),radius = 5) (2)

7.Let's find out the points of intersection of two circles

Subtracting the eqn (2) from eqn (1),we get

x=3.6 (3)

Subtstuting the value of x from eqn (3) into eqn (1),we get

y=4.8,-4.8 (4)

8.Therefore from eqn(3) and eqn(4),we get the coordinates of A and D respectively

9.Finally,we have Coordinates of A(3.6,4.8),D(3.6,-4.8) and C(10,0).

10.Below figure is the required construction.

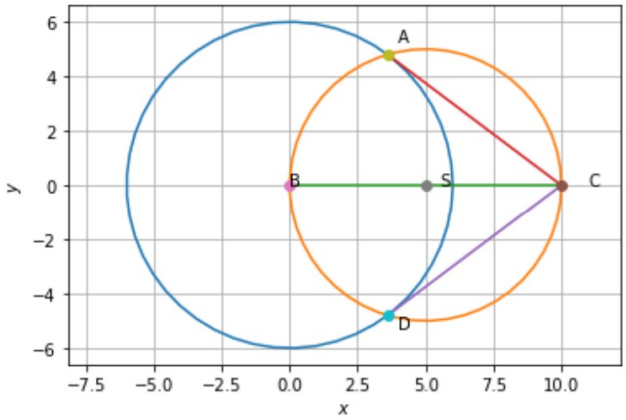


Figure 1: Figure using python