x

3-3.3-10

EE24BTECH11063 - Y.Harsha Vardhan Reddy

Question:
Construct a right triangle ABC with AB=6cm, BC =8cm and $\angle B = 90°$. Draw BD, the perpendicular from B on AC. Draw the circle through B, C and D and construct the tangents from A to this circle.
Solution: Given, a=8cm and c=8cm.

Variable	Description
a	length of side-BC
b	length of side-CA
c	length of side-AB
A	co-ordinates of vertex-1
B	co-ordinates of vertex-2
C	co-ordinates of vertex-3
D	co-ordinates of perpendicular from B on AC

TABLE 0: Variables Used

Let us place B at origin, A along x-axis and C along the y-axis i.e,

$$B = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \tag{0.1}$$

$$A = \begin{pmatrix} 6 \\ 0 \end{pmatrix} \tag{0.2}$$

$$C = \begin{pmatrix} 0 \\ 8 \end{pmatrix} \tag{0.3}$$

Now let us find the co-ordinates of D,
Equation of AC is given by,
$4x + 3y = 8$
Equation of BD is given by,

$3x = 4y$

By solving we get,

$$D = \left(3.84, 2.88\right) \tag{0.4}$$

By using the co-ordinates of B, C, D circle can be drawn and tangent can be constructed from A to circle