Assignment No.1

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1 QUESTION No.13

In Fig. $\triangle ABD$ *is a right triangle, right −angled at* A *and* ACBD. *Prove that* AB^2=$BC.BD$.

2 SOLUTION

In $\triangle ABD$, $AB^2 + AD^2 = BD^2 − − − − −(1)$
In $\triangle ABC$, $AC^2 + BC^2 = AB^2 − − − − −(2)$
In $\triangle ACD$, $AC^2 + CD^2 = AD^2 − − − − −(3)$
Subtracting (3) from (2) $AB^2 − AD^2 = BC^2 − CD^2 − − − − −(4)$
 Adding 1 and 4 $2AB^2 = BC^2 + BD^2 − CD^2$
$2AB^2 = (BC + CD)^2 + BC^2 − CD^2$
Since BD=BC+CD $2AB^2 = 2BC^2 + 2BC.CD$
$2AB^2 = (BC + CD)2BC$
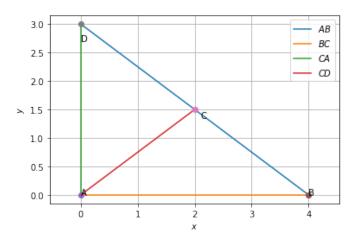AB^2=$BC.BD$
Hence it is proved that AB^2=$BC.BD$
□

Fig. 0: Right angled triangle

3 2.QUESTION 9

In Fig. $\triangle ABC$ is circumscribing a circle. Find the length of BC.

4 SOLUTION

Given BR=3cm AR=4cm AC=11cm
BP=BR
AQ=AR
CP=CQ
(Because length of tangents to circle from external point will be equal)
Therefore AQ=44cm BP=3cm
As AC=11cm
QC+AQ=11cm QC=11-AQ
QC=7cm PC=7cm
BC=BP+PC
BC=3+7 BC=10cm
The length of BCis 10cm
□

Fig. 0: tangent lines to circle radius 4 units.