Assignment No.1

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Download all python codes from

https://github.com/ka−raja−babu/Matrix−Theory/tree/main/Assignment1/Codes

and latex-tikz codes from

https://github.com/ka−raja−babu/Matrix−Theory/tree/main/Assignment1

1 Question No.9

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 $AB^2 = BC.BD$

□

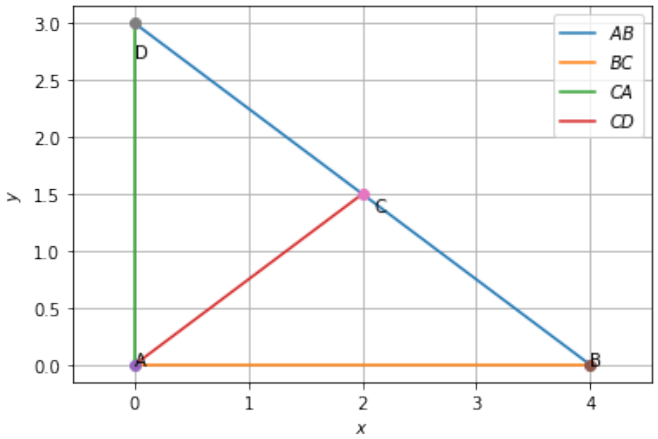

Fig. 0: Right angled triangle

3 2.Question 13

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

4 Solution

Given BR=3*cm* AR=4*cm* AC=11*cm*

BP=BR

AQ=AR

CP=CQ

(Because length of tangents to circle from external point will be equal)

Therefore AQ=44*cm* BP=3*cm*

As AC=11*cm*

QC+AQ=11*cm* QC=11-AQ

QC=7*cm* PC=7*cm*

BC=BP+PC

BC=3+7 BC=10*cm*

The length of BCis 10*cm*

□

Tangent.png

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