

# Tangents have Two Values Depending on Sides of Triangle Excluding Hypotenuse

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**Abstract:- Tangent 90 Degree is not undefined like all other values if we increase or decrease one parameter other parameters change accordingly so how it can be undefined**

## I. INTRODUCTION

All scientists have left behind the values of tangent(tan) , cosine(cos) and sine(sin) values at some angles.

Here we are trying to find the values of sine that is sin

Cosine that is cos

Tangent that is tan

Here in this paper we are trying to define these values.

Lets start from basic first

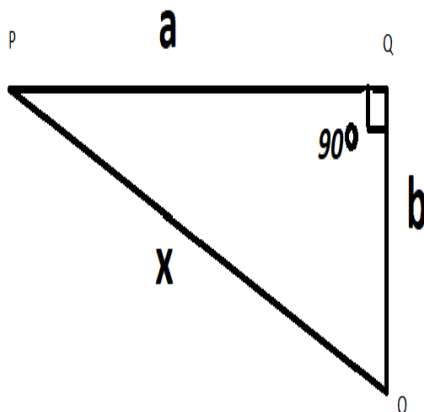


Fig. 1: PQR is a right angled triangle right angled at angle PQR that is Q

Lets take “z” be any angle in this triangle

Where PQO is a triangle

In which PQ length = a  
 QO length = b  
 PO length = x

$\sin z = (\text{opposite side})/(\text{longest side})$   
 $\cos z = (\text{adjacent side})/(\text{longest side})$   
 $\tan z = (\text{opposite side})/(\text{adjacent side})$

$\sin 90 = x/a$   
 $\cos 90 = b/a$   
 $(\tan 90)_1 = x/b$                        $(\tan 90)_2 = x/b$

Here 1 , 2 describe two values based on a and b

As there are two adjacent sides for tan 900

Tan 900 will have two values its not undefined

It describes x can have two values based on change of value of “a” or change of value of “b”

It will change everytime even if one of them is changed

You can calculate it by simple diagrams or calculations

It’s a simple diagram

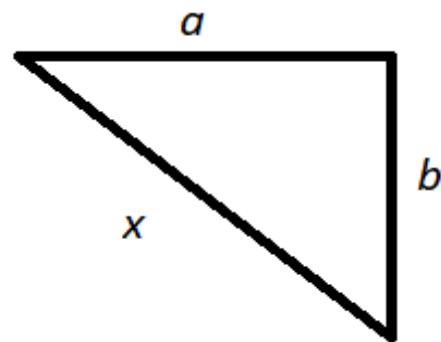


Fig. 2: A right angled triangle

If we add g to length of a , x length will change while there is no effect on b

Here you can also see that by adding length to the longer side ,the hypotenuse that is x also gets longer.

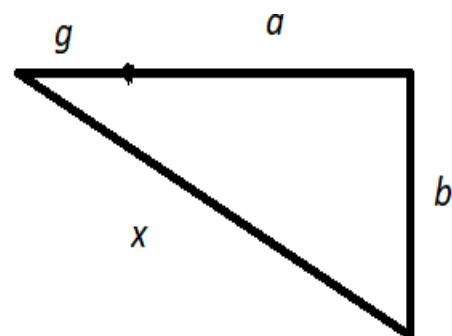


Fig. 3: A Right angled triangle

If we add h length to b ,x length will change while there is no effect on a

Here if you add length to the shorter side ,the hypotenuse x also gets shorter

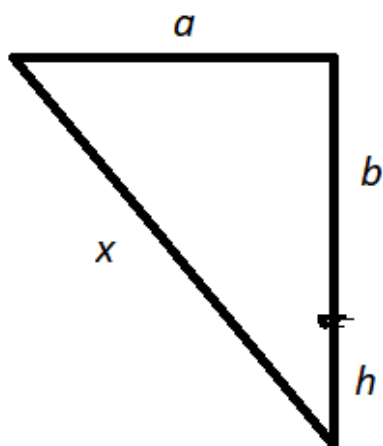


Fig. 4: A Right Angled Triangle

## II. CONCLUSION

You can calculate it by simple paper cuttings

This shows it is not undefined

It can be defined

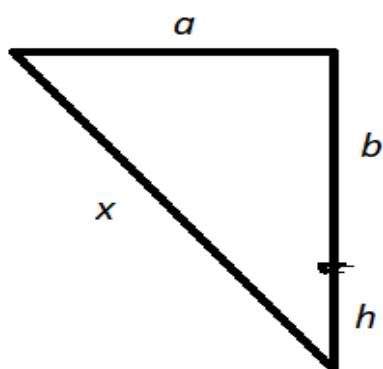


Fig. 5: A Right Angled Triangle

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- [5.] NCERT BOOKS of classes 6 to 12
- [6.] I studied them by heart they are knowledge Which is the curriculum of Central board of secondary education in Delhi and other parts of India.