

**CASE STUDY OF TOP ANGLE
 OF AN OBTUSE TRIANGLE WITH DIFFERENCE OF TWO ANGLE 90°**

RAJBALI YADAV*

Ordnance Factory Khamaria Jabalpur, (M.P.), India.-482005.

(Received On: 21-07-20; Revised & Accepted On: 27-07-20)

ABSTRACT

In this study it is proved that in a triangle if difference of two angles are 90° & top angle is divided in two parts (α_1 & α_2), and separation line divide base in two equal parts then difference of, Cosine & Sine ratio of angle (α_2 & α_1) and Cosine & Sine ratio of angle (α_1 & α_2) is a Constant.

Keywords: Differentiation, Maximum area, Obtuse triangle.

1. INTRODUCTION

In present $(m+ n) \cot \Theta = m \cot \alpha_1 - n \cot \alpha_2$ is relation among separated angles (α_1 & α_2) and separation line inclination angle Θ . This study establish relation between separated angles (α_1 & α_2) and says in a triangle, if difference of two angles are 90 and separation line divide base in two equal parts then *difference of, Cosine & Sine ratio of angle (α_2 & α_1) and Cosine & Sine ratio of angle (α_1 & α_2) is a Constant*.

2. OBTUSE TRIANGLE WITH DIFFERENCE OF TWO ANGLE 90°

2.1 In a triangle when difference of two angle is 90 and base of triangle is divided in two equal parts by line drawn from top of the triangle (Figure 2) then *'Difference of, Cosine and Sine ratio of second & first (α_2 & α_1) separated angles and Cosine & Sine ratio of first & second (α_1 & α_2) separated angles, is a Constant'*.

It can be written as,

$$\frac{\cos \alpha_2}{\sin \alpha_1} - \frac{\cos \alpha_1}{\sin \alpha_2} = \text{Constant} = 2$$

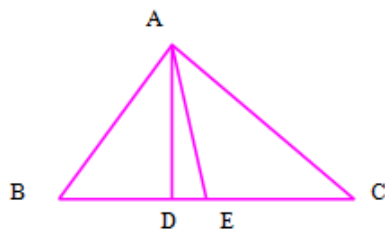


Figure-1

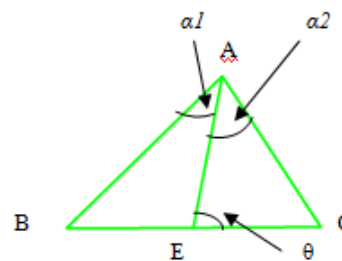


Figure-2

Abbreviation & various Steps used in this paper:

- α_1 = First separated angle
- α_2 = Second separated angle
- E is mid of BC line
- AB = c , BC = a , AC = b
- Angle ABC = β , Angle BAC = α , Angle ACB = γ

Corresponding Author: Rajbali Yadav*
Ordnance Factory Khamaria Jabalpur, (M.P.), India.-482005.

For max. area of ΔADE in ΔABC

$$1) a = \frac{(b^2 - c^2)}{\sqrt{(b^2 + c^2)}} a$$

$$2) \alpha + 2\beta = 270^\circ \text{ Or } \beta - C = 90^\circ$$

$$3) \cos\alpha = -\sin 2\beta = \sin 2C = \frac{2bc}{b^2 + c^2}$$

$$4) BC \sin(\alpha + 2\beta) + 2DE \sin \alpha = 0$$

$$5) AB^2 + AC^2 = (2DE)^2$$

$$6) 2DE \times AD = AB \times AC$$

$$7) \frac{\cos\alpha 1}{\sin\alpha 2} - \frac{\cos\alpha 2}{\sin\alpha 1} = 2.0$$

2.1 Proof.

in ΔABC (Figure1)

E is mid of BC

D is perpendicular at at BC

$$BD = (a/2 - DE), \quad DC = (a/2 + DE)$$

In ΔADB

$$AD^2 = c^2 - (a/2 - DE)^2 \tag{1}$$

In ΔADC

$$AD^2 = b^2 - (a/2 + DE)^2 \tag{2}$$

After solving (1) & (2)

$$c^2 - (a/2 - DE)^2 = b^2 - (a/2 + DE)^2$$

$$c^2 - (a/2)^2 - DE^2 + DE \times a = b^2 - (a/2)^2 - DE^2 - DE \times a$$

$$c^2 + DE \times a = b^2 - DE \times a$$

$$DE = \frac{b^2 - c^2}{2a}$$

Put the value of DE in equation (2)

$$AD^2 = b^2 - \left[\frac{a}{2} + \frac{(b^2 - c^2)}{2a} \right]^2 \quad \text{OR} \quad AD = \frac{\sqrt{(2ab)^2 - (a^2 + b^2 - c^2)^2}}{2a}$$

Area of ΔADE (A1) = $\frac{1}{2} AD \times DE$

$$= \frac{1}{2} \times \frac{\sqrt{(2ab)^2 - (a^2 + b^2 - c^2)^2}}{2a} \times \frac{(b^2 - c^2)}{2a}$$

$$A1 = \frac{(b^2 - c^2)}{8a^2} \times \sqrt{[(2ab)^2 - (a^2 + b^2 - c^2)^2]} \tag{3}$$

$$A1^2 = \frac{(b^2 - c^2)^2}{64a^4} \times [(2ab)^2 - (a^2 + b^2 - c^2)^2]$$

For being area of ΔADE Max. Or Mini.

$$\frac{dA1}{da} = \frac{dA1}{db} = \frac{dA1}{dc} = 0$$

Take $dA1/da = 0$

$$2A1 \frac{dA1}{da} = \frac{1}{64} \frac{d}{da} \frac{(b^2 - c^2)^2}{a^4} \times [(2ab)^2 - (a^2 + b^2 - c^2)^2]$$

$$128A1 \frac{dA1}{da} = (b^2 - c^2)^2 \frac{d}{da} \frac{1}{a^4} \times [(2ab)^2 - (a^2 + b^2 - c^2)^2]$$

$$= (b^2 - c^2)^2 \frac{d}{da} [4b^2/a^2 - (1 + b^4/a^4 + 2b^2/a^2 + c^4/a^4 - 2c^2/a^2 - 2b^2c^2/a^4)]$$

$$\frac{d}{da} [4b^2/a^2 - (1+b^4/a^4 + 2b^2/a^2 + c^4/a^4 - 2c^2/a^2 - 2b^2c^2/a^4)] = 0 \quad \text{put } \frac{dA_1}{da} = 0$$

$$-8b^2/a^3 + 4b^4/a^5 + 4b^2/a^3 + 4c^4/a^5 - 4c^2/a^3 - 8b^2c^2/a^5 = 0$$

$$-2b^2 + b^4/a^2 + b^2 + c^4/a^2 - c^2 - 2b^2c^2/a^2 = 0$$

$$b^4/a^2 + c^4/a^2 - 2b^2c^2/a^2 = b^2 + c^2$$

$$[(b^2 - c^2)/a]^2 = b^2 + c^2$$

$$a = b^2 - c^2 / \sqrt{(b^2 + c^2)} \quad \text{For Max. area of } \Delta ADE$$

(4)

Put the value of a in eqn. (3)

$$A_1 = \frac{(b^2 - c^2)}{8a^2} \sqrt{[(2ab)^2 - (a^2 + b^2 - c^2)^2]}$$

$$A_{1\max} = \frac{(b^2 - c^2)}{8(b^2 - c^2)^2} \times \frac{\sqrt{4(b^2 - c^2)^2 b^2 - [(b^2 - c^2)^2 + b^2 - c^2]^2}}{b^2 + c^2}$$

$$= \frac{(b^2 + c^2)}{8(b^2 - c^2)} \times \frac{\sqrt{4(b^2 - c^2)^2 b^2 - [b^4 + c^4 - 2b^2c^2 + b^4 - c^4]^2}}{(b^2 + c^2)^2}$$

$$= \frac{(b^2 + c^2)}{8(b^2 - c^2)} \times \frac{\sqrt{4(b^2 - c^2)^2 b^2 - [2b^2(b^2 - c^2)]^2}}{(b^2 + c^2)^2}$$

$$= \frac{(b^2 + c^2)}{8(b^2 - c^2)} \times \frac{\sqrt{4b^2(b^2 - c^2)^2(b^2 + c^2) - [2b^2(b^2 - c^2)]^2}}{(b^2 + c^2)^2}$$

$$= \frac{(b^2 + c^2) \times 2b(b^2 - c^2)}{8(b^2 - c^2) \times (b^2 + c^2)} \times \sqrt{(b^2 + c^2 - b^2)}$$

$$A_{1\max} = \frac{b \times c}{4}$$

2.2 According to Cosine rule

$$\cos \alpha = \frac{(b^2 + c^2 - a^2)}{2bc}$$

Put the value of a

$$\cos \alpha = \frac{b^2 + c^2 - \frac{(b^2 - c^2)^2}{(b^2 + c^2)}}{2bc} = \frac{b^4 + c^4 + 2b^2c^2 - b^4 - c^4 + 2b^2c^2}{2bc(b^2 + c^2)} = \frac{4b^2c^2}{2bc(b^2 + c^2)}$$

$$\cos \alpha = \frac{2bc}{(b^2 + c^2)}$$

Add 1 both side

$$\cos \alpha + 1 = (2bc + b^2 + c^2) / (b^2 + c^2)$$

$$\cos \alpha + 1 = (b + c)^2 / (b^2 + c^2)$$

Equation (2) can also be written as

$$[a/(b - c)]^2 = (b + c)^2 / (b^2 + c^2)$$

Hence

$$\cos \alpha + 1 = [a/(b - c)]^2$$

$$a/(b - c) = \sqrt{(1 + \cos \alpha)}$$

$$= \sqrt{(1 + 2 \cos^2 \alpha / 2 - 1)}$$

$$= \frac{\sqrt{2 \cos \alpha / 2}}{a} \text{ or } \frac{(b - c)}{\sqrt{2 \cos \alpha / 2}} = 1$$

Using Sine rule

$$\frac{(\sin \beta - \sin C)}{\sin \alpha} = \frac{1}{\sqrt{2 \cos \alpha / 2}} \quad C = 180^\circ - (\alpha + \beta)$$

$$\sin\beta - \sin[180 - (\alpha + \beta)] = \frac{\sin\alpha}{\sqrt{2} \cos \alpha / 2}$$

$$\sin\beta - \sin(\alpha + \beta) = \frac{2\sin(\alpha / 2)\cos(\alpha / 2)}{\sqrt{2} \cos \alpha / 2}$$

$$\sin\beta - \sin(\alpha + \beta) = \sqrt{2} \sin \alpha / 2$$

$$2\cos[(\beta + \alpha + \beta) / 2] \sin[(\beta - \alpha - \beta) / 2] = \sqrt{2} \sin(\alpha / 2)$$

Using (SinC – SinD) formula

$$\frac{-2\cos(\alpha + 2\beta)}{2} = \sqrt{2}$$

$$\cos \frac{(\alpha + 2\beta)}{2} = -\frac{1}{\sqrt{2}} = \cos(180^\circ - 45^\circ)$$

$$\alpha + 2\beta = 270^\circ$$

$$\alpha + \beta + \beta = 270^\circ$$

$$180 - C + \beta = 270^\circ \quad \text{or} \quad \beta - C = 90^\circ$$

$$\cos\alpha = 2bc / (b^2 + c^2)$$

And

$$\alpha + 2\beta = 270^\circ \quad \text{Or} \quad \alpha = 270^\circ - 2\beta$$

$$\cos(270^\circ - 2\beta) = 2bc / (b^2 + c^2)$$

$$-\sin 2\beta = \frac{2bc}{(b^2 + c^2)}$$

$$\beta = 90 + C$$

$$-\sin 2(90 + C) = \frac{2bc}{(b^2 + c^2)} = -\sin(180 + 2C) = \frac{2bc}{(b^2 + c^2)}$$

$$\sin 2C = \frac{2bc}{(b^2 + c^2)}$$

$$\cos\alpha = \sin 2\beta = \sin 2C = \frac{2bc}{b^2 + c^2}$$

In figure (1)

E is mid of BC line

$$\text{Area of } \triangle ADE \text{ (A1)} = \frac{(b^2 - c^2)}{8a^2} \times \sqrt{[(2ab)^2 - (a^2 + b^2 - c^2)^2]}$$

And

$$\text{Area of } \triangle ABC \text{ (A)} = \frac{1}{4} \times \sqrt{[(2ab)^2 - (a^2 + b^2 - c^2)^2]}$$

Dividing A1/A

$$A1/A = \frac{(b^2 - c^2) / 8a^2 \times \sqrt{[(2ab)^2 - (a^2 + b^2 - c^2)^2]}}{1/4 \times \sqrt{[(2ab)^2 - (a^2 + b^2 - c^2)^2]}}$$

$$A1/A = (b^2 - c^2) / 2a^2 \tag{5}$$

According to figure 1

$$A1 = \frac{1}{2} \times DE \times AD$$

$$A = \frac{1}{2} \times BC \times AD$$

Hence A1/A = DE/BC, Put the value of A1/A in equation no. (5)

$$DE/BC = (b^2 - c^2) / 2a^2 \tag{6}$$

Using Sine rule

$$\begin{aligned} \frac{2DE}{BC} &= \frac{\sin^2\beta - \sin^2C}{\sin^2\alpha} \\ &= \frac{(\sin\beta + \sin C)(\sin\beta - \sin C)}{\sin^2\alpha} \end{aligned}$$

$$\begin{aligned}
 &= \frac{[\sin\beta + \sin(180^\circ - \alpha + \beta)][\sin\beta - \sin(180^\circ - \alpha + \beta)]}{\sin^2\alpha} && C = 180^\circ - (\alpha + \beta) \\
 &= \frac{[\sin\beta + \sin(\alpha + \beta)][\sin\beta - \sin(\alpha + \beta)]}{\sin^2\alpha} \\
 &= \frac{2\sin[(\alpha + 2\beta)/2]\cos(\alpha/2) \times -2\cos[(\alpha + 2\beta)/2]\sin(\alpha/2)}{\sin^2\alpha} && \text{use } \sin C + \sin D \text{ and } \sin C - \sin D \\
 &\text{formula} \\
 &= \frac{2\sin[(\alpha + 2\beta)/2]\cos[(\alpha + 2\beta)/2] \times 2\sin(\alpha/2)\cos(\alpha/2)}{\sin^2\alpha} \\
 &= -\sin[(\alpha + 2\beta) \times \sin\alpha \times / \sin^2\alpha
 \end{aligned}$$

$$2DE/BC = -\sin[(\alpha + 2\beta)/\sin\alpha]$$

$$2DE \sin\alpha = -BC \sin[(\alpha + 2\beta)]$$

$$BC \sin[(\alpha + 2\beta)] + 2DE \sin\alpha = 0$$

By previous relation it is proved that for maximum area of ΔADE
 $\alpha + 2\beta = 270^\circ$

Put this value in above equation

$$BC \sin 270^\circ + 2DE \sin\alpha = 0, \quad -BC + 2DE \sin\alpha = 0$$

$$\sin\alpha = BC/2DE \quad \text{as } BC = a \text{ and } DE = a1 \text{ So, } \sin\alpha = a/2a1 \tag{7}$$

According to equation no. (5) $2DE/BC = (b^2 - c^2)/a^2$

$$\sin\alpha = BC/2DE$$

$$= 1/(b^2 - c^2)/a^2$$

$$\sin\alpha = a^2/(b^2 - c^2) \tag{8}$$

According to equation no. (4)

$$a^2 = \frac{(b^2 - c^2)^2}{b^2 + c^2}$$

put the value of a^2 in equation no.(8)

$$\sin\alpha = \frac{(b^2 - c^2)^2}{(b^2 + c^2)(b^2 - c^2)}$$

$$\sin\alpha = \frac{b^2 - c^2}{b^2 + c^2} \tag{9}$$

According to equation no. (7) $\sin\alpha = a/2a1$

Put the value of a from equation no4 and $\sin\alpha$ from equation no. (9) in equation no. (7)

$$\frac{(b^2 - c^2)}{(b^2 + c^2)} = \frac{b^2 - c^2}{\frac{\sqrt{(b^2 + c^2)}}{2a1}}$$

$$\frac{(b^2 - c^2)}{(b^2 + c^2)} = \frac{b^2 - c^2}{2a1 \times \sqrt{(b^2 + c^2)}}$$

$$2a1 = \frac{(b^2 + c^2)}{\sqrt{(b^2 + c^2)}}$$

$$(2a1)^2 = b^2 + c^2 \quad \text{OR} \quad (2DE)^2 = AC^2 + AB^2 \quad \text{As, } AB = c \text{ AC} = b \text{ \& } DE = a1$$

$$AC^2 + AB^2 = (2DE)^2 \tag{10}$$

As we are knowing Max. area of $\Delta ADE = bc/4$

In figure 1 area of $\Delta ADE = 1/2 \times AD \times DE$

Hence

$$1/2 \times AD \times DE = bc/4$$

$$AD = bc/2DE \text{ Or } bc/2a1, \quad DE = a1$$

$$\text{And } a1 = a / 2\sin\alpha$$

$$\text{Hence } AD = \frac{bc}{2a / 2\sin\alpha} = \frac{bc \sin\alpha}{a} \quad (11)$$

In eqn. no. (4) & (9)

$$a = \frac{(b^2 - c^2)}{\sqrt{(b^2 + c^2)}} \text{ and } \sin\alpha = \frac{(b^2 - c^2)}{(b^2 + c^2)}$$

Put the value of a & Sinα in eqn. no. (11)

$$AD = \frac{bc \times \frac{(b^2 - c^2)}{(b^2 - c^2)}}{\sqrt{(b^2 + c^2)}} \quad \text{Or} \quad AD = \frac{bc}{\sqrt{(b^2 + c^2)}}$$

$$AD^2 = \frac{(bc)^2}{(b^2 + c^2)} \quad \text{we know } b^2 + c^2 = (2a1)^2$$

$$AD^2 = \frac{(bc)^2}{(2a1)^2}$$

$$2a1 \times AD = b \times c \quad \text{Or } 2DE \times AD = AB \times AC \quad (12)$$

We know,

$$\cos\alpha = -\sin 2\beta = \sin 2C = \frac{2bc}{b^2 + c}$$

And

$$b^2 + c^2 = (2DE)^2, \quad bc = 2AD \times DE$$

$$\cos\alpha = -\sin 2\beta = \sin 2C = \frac{2bc}{b^2 + c} = \frac{4AD \times DE}{4DE^2} = \frac{AD}{DE}$$

In figure 2, AD/DE = Tanθ

Hence

$$\cos\alpha = -\sin 2\beta = \sin 2C = \tan\theta$$

In figure 2

$$(CE+BE) \cot\theta = CE \cot\alpha_1 - BE \cot\alpha_2$$

$$BC \cot\theta = BC/2(\cot\alpha_1 - \cot\alpha_2) \quad \text{As } BE = CE = BC/2$$

$$2\cot\theta = \cot\alpha_1 - \cot\alpha_2 \quad \tan\theta = \cos\alpha$$

$$2/\tan\theta = \cot\alpha_1 - \cot\alpha_2$$

$$2/\cos\alpha = \cot\alpha_1 - \cot\alpha_2$$

$$\frac{2}{\cos\alpha} = \frac{\cos\alpha_1}{\sin\alpha_1} - \frac{\cos\alpha_2}{\sin\alpha_2}$$

$$= \frac{\sin\alpha_2 \cos\alpha_1 - \cos\alpha_2 \sin\alpha_1}{\sin\alpha_1 \sin\alpha_2} = \frac{\sin(\alpha_2 - \alpha_1)}{\sin\alpha_1 \sin\alpha_2}$$

$$2 \sin\alpha_1 \sin\alpha_2 = \cos\alpha \sin(\alpha_2 - \alpha_1)$$

$$2 \sin\alpha_1 \sin(\alpha - \alpha_1) = \sin(\alpha - 2\alpha_1) \cos\alpha \quad \text{As } \alpha_2 = \alpha - \alpha_1 \text{ and } \alpha = \alpha_1 + \alpha_2$$

$$\cos(\alpha_1 - \alpha + \alpha_1) - \cos(\alpha_1 + \alpha - \alpha_1) = 1/2[\sin(\alpha - 2\alpha_1 + \alpha) + \sin(\alpha - 2\alpha_1 - \alpha)] \quad \text{Using } 2\sin A \sin B \text{ \& } 2\sin A \cos B \text{ Formula}$$

$$\cos(2\alpha_1 - \alpha) - \cos\alpha = 1/2[\sin 2(\alpha - \alpha_1) - \sin 2\alpha_1]$$

$$\cos(2\alpha_1 - \alpha) - \cos\alpha = 1/2[2 \sin(\alpha - \alpha_1) \cos(\alpha - \alpha_1) - 2 \sin\alpha_1 \cos\alpha_1] \quad \text{using, } \sin 2\alpha = 2 \sin\alpha \cos\alpha$$

$$\cos(2\alpha_1 - \alpha) - \cos\alpha = \sin(\alpha - \alpha_1) \cos(\alpha - \alpha_1) - \sin\alpha_1 \cos\alpha_1$$

$$\cos\alpha = \cos(2\alpha_1 - \alpha) + \sin\alpha_1 \cos\alpha_1 - \sin(\alpha - \alpha_1) \cos(\alpha - \alpha_1) \setminus$$

$$\cos \alpha = \cos(2\alpha_1 - \alpha_1 - \alpha_2) + \sin \alpha_1 \cos \alpha_1 - \sin \alpha_2 \cos \alpha_2, \text{ As } \alpha - \alpha_1 = \alpha_2$$

$$\cos \alpha = \cos(\alpha_1 - \alpha_2) + \frac{\sin 2\alpha_1}{2} - \frac{\sin 2\alpha_2}{2}$$

$$\begin{aligned} \cos \alpha &= \cos(\alpha_1 - \alpha_2) + 1/2(\sin 2\alpha_1 - \sin 2\alpha_2) \\ &= \cos(\alpha_1 - \alpha_2) + \frac{2\cos(\alpha_1 + \alpha_2)\sin(\alpha_1 - \alpha_2)}{2} \\ &= \cos(\alpha_1 - \alpha_2) + \cos(\alpha_1 + \alpha_2)\sin(\alpha_1 - \alpha_2) \\ &= \cos(\alpha_1 - \alpha_2) + \cos \alpha \sin(\alpha_1 - \alpha_2) \end{aligned}$$

$$\cos \alpha = \cos(\alpha_1 - \alpha_2) - \cos \alpha \sin(\alpha_2 - \alpha_1) \text{ As } \sin(-\alpha) = -\sin \alpha$$

$$\cos \alpha + \cos \alpha \sin(\alpha_2 - \alpha_1) = \cos(\alpha_1 - \alpha_2)$$

$$\cos \alpha [1 + \sin(\alpha_2 - \alpha_1)] = \cos(\alpha_2 - \alpha_1)$$

$$\cos \alpha = \frac{\cos(\alpha_2 - \alpha_1)}{1 + \sin(\alpha_2 - \alpha_1)}$$

$$1 + \sin(\alpha_2 - \alpha_1) = \frac{\cos(\alpha_2 - \alpha_1)}{\cos \alpha} = \frac{\cos(\alpha_2 - \alpha_1)}{\cos(\alpha_2 + \alpha_1)}$$

$$\begin{aligned} \sin(\alpha_2 - \alpha_1) &= \frac{\cos(\alpha_2 - \alpha_1)}{\cos(\alpha_2 + \alpha_1)} - 1 \\ &= \frac{\cos(\alpha_2 - \alpha_1) - \cos(\alpha_2 + \alpha_1)}{\cos(\alpha_2 + \alpha_1)} \text{ using (Cos C-Cos D) formula} \\ &= \frac{2 \sin\left[\frac{\alpha_2 - \alpha_1 + \alpha_2 + \alpha_1}{2}\right] \sin\left[\frac{\alpha_2 + \alpha_1 - \alpha_2 + \alpha_1}{2}\right]}{\cos(\alpha_2 + \alpha_1)} \end{aligned}$$

$$\sin(\alpha_2 - \alpha_1) = \frac{2\sin \alpha_2 \times \sin \alpha_1}{\cos(\alpha_2 + \alpha_1)}$$

$$2\sin(\alpha_2 - \alpha_1) \times \cos(\alpha_2 + \alpha_1) = 2 \times 2\sin \alpha_2 \times \sin \alpha_1$$

$$\sin(\alpha_2 - \alpha_1 + \alpha_2 + \alpha_1) + \sin(\alpha_2 + \alpha_1 - \alpha_2 - \alpha_1) = 2 \times 2\sin \alpha_2 \times \sin \alpha_1$$

$$\sin 2\alpha_2 - \sin 2\alpha_1 = 2 \times 2\sin \alpha_2 \times \sin \alpha_1$$

$$2\sin \alpha_2 \cos \alpha_2 - 2\sin \alpha_1 \cos \alpha_1 = 2 \times 2\sin \alpha_2 \times \sin \alpha_1$$

$$\sin \alpha_2 \cos \alpha_2 - \sin \alpha_1 \cos \alpha_1 = 2\sin \alpha_2 \times \sin \alpha_1$$

$$\frac{\sin \alpha_2 \cos \alpha_2}{\sin \alpha_2 \times \sin \alpha_1} - \frac{\sin \alpha_1 \cos \alpha_1}{\sin \alpha_2 \times \sin \alpha_1} = 2$$

$$\frac{\cos \alpha_2}{\sin \alpha_1} - \frac{\cos \alpha_1}{\sin \alpha_2} = 2$$

3. REFERENCES

1. Rajbali Yadav, Right angle triangle with application of two circles on the base of triangle, International Journal of Mathematical Archive- 11(7), 2020, 17-22.
2. S.L LONEY plain trigonometry part 1, product formulae page 77.
3. www.askiitians.com

Source of support: Nil, Conflict of interest: None Declared.

[Copy right © 2020. This is an Open Access article distributed under the terms of the International Journal of Mathematical Archive (IJMA), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.]