TRIGONMETRIC-FUNCTION

INTRODUCTION

Trigonometry is one of the major topics in Maths subject. Trigonometry deals with the measurement of angles and sides of a triangle. Usually, trigonometry is considered for the right-angled triangle. Also, its functions are used to find out the length of the arc of a circle, which forms a section in the circle with radius and its center point.

If we break the word trigonometry, 'Tri' is a Greek word which means 'Three', 'Gon' means 'length' and 'metry' means 'measurement'. So basically, trigonometry is a study of triangles, which has angles and lengths on its side. Trigonometry basics consist of sine, cosine and tangent functions

NOTE

Degree	30°	45°	60°	90°	180°	270°	360°
Radian	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$	π	$3\pi/2$	2π

EXAMPLE SUMS

Q. No.1: In any triangle ABC, prove that $a \sin (B - C) + b \sin (C - A) + c \sin (A - B) = 0$.

Solution:

In any triangle ABC,

$a/\sin A = b/\sin B = c/\sin C = k$

$a = k \sin A, b = k \sin B, c = k \sin C$

LHS

$= a \sin (B - C) + b \sin (C - A) + c \sin (A - B)$

$= k \sin A [\sin B \cos C - \cos B \sin C] + k \sin B [\sin C \cos A - \cos C \sin A] + k \sin C [\sin A \cos B - \cos A \sin B]$

= k sin A sin B cos C − k sin A cos B sin C + k sin B sin C cos A − k sin B cos C sin A + k sin C sin A cos B − k sin C cos A sin B

= 0

= RHS

Hence proved that a sin (B − C) + b sin (C − A) + c sin (A − B) = 0.

Q.No.2: Find the radius of the circle in which a central angle of 60° intercepts an arc of length 37.4 cm (use π = 22/7).

Solution:

Given,

Length of the arc = l = 37.4 cm

Central angle = θ = 60° = 60π/180 radian = π/3 radians

We know that,

r = l/θ

= (37.4) * (π / 3)

= (37.4) / [22 / 7 * 3]

= 35.7 cm

Hence, the radius of the circle is 35.7 cm.

PRATICE SUM

Q,No.1:A wheel makes 360 revolutions in one minute. Through how many radians does it turn in one second?

Q.No.2:Find the value of √3 cosec 20° − sec 20°