Trigonometric Ratios Ex 5.1 Q36

Answer :

(i) In $\tan A$, $\angle A$ is acute an angle

Therefore,

Minimum value of $\angle A$ is 0° and

Maximum value of $\angle A$ is 90°

We know that $\tan 0^\circ = 0$ and

tan90° = ∞

Therefore the statement that;

"The value of $\tan A$ is always less than1" is false

(ii) $\sec A = \dfrac{1}{\cos A}$

In $\sec A$ and $\cos A$, $\angle A$ is acute angle

Therefore,

Minimum value of $\angle A$ is 0°and

Maximum value of $\angle A$ is 90°

We know that cos0° = 1 and

cos90° = 0

Now,

$$\sec 0^\circ = \frac{1}{\cos 0^\circ}$$

$$= \frac{1}{1}$$

$$= 1$$

Therefore minimum value of $\sec A$ is $\sec 0° = 1$ ..... (1)

Now,

$$\sec 90° = \frac{1}{\cos 90°}$$
$$= \frac{1}{0}$$
$$= \infty$$

Therefore maximum value of $\sec A$ is $\sec 90° = \infty$ ..... (2)

Now consider the given value

$$\sec A = \frac{12}{5}$$

Here, $\frac{12}{5} = 2.4$

This value 2.4 lies in between 1 and ∞

Now from equation (1) and (2) , we can say that the value $\frac{12}{5} = 2.4$ lies in between minimum value of $\sec A$ (that is 1) and maximum value of $\sec A$ (that is ∞)

Hence, $\sec A = \frac{12}{5}$, for some value of angle A is true

(iii) Cosecant of angle A is defined as $\text{cosec} A = \frac{1}{\sin A}$

Also, $\sin A$ is defined as $\sin A = \frac{\text{Perpendicular side opposite to} \angle A}{\text{Hypotenuse}}$

Therefore,

$$\text{cosec} A = \frac{\text{Hypotenuse}}{\text{Perpendicular side opposite to} \angle A} \quad \text{..... (1)}$$

And

$\cos A$ is defined as $\cos A = \frac{\text{Base side adjacent to} \angle A}{\text{Hypotenuse}}$ ..... (2)

Therefore from equation (1) and (2) , it is clear that $\cos A$ and $\text{cosec} A$ (that is cosecant of angle A) are two different trigonometric angles

Hence, $\cos A$ is the abbreviation used for cosecant of angle A is False

(iv) cot A is a trigonometric ratio which means cotangent of angle A

Hence, $\cot A$ is the product of cot and A is False

(v) $\sin \theta = \frac{4}{3}$

The value $\frac{4}{3} = 1.333$

In $\sin \theta$, $\angle \theta$ is acute an angle

Therefore,

Minimum value of $\angle \theta$ is 0° and

Maximum value of $\angle \theta$ is 90°

We know that $\sin 0° = 0$ and

sin90° = 1

Therefore the value of $\sin \theta$ should lie between 0 and 1 and must not exceed 1

Hence the given value for $\sin \theta$ (that is $\frac{4}{3} = 1.333$) is not possible

Therefore, $\sin \theta = \frac{4}{3}$, for some angle θ = False

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