



Trigonometric Ratios Ex 5.1 Q36

**Answer :**

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

Therefore,

Minimum value of  $\angle A$  is  $0^\circ$  and

Maximum value of  $\angle A$  is  $90^\circ$

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

$\tan 90^\circ = \infty$

Therefore the statement that;

"The value of  $\tan A$  is always less than 1" is false

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

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

Therefore,

Minimum value of  $\angle A$  is  $0^\circ$  and

Maximum value of  $\angle A$  is  $90^\circ$

We know that  $\cos 0^\circ = 1$  and

$\cos 90^\circ = 0$

Now,

$$\begin{aligned} \sec 0^\circ &= \frac{1}{\cos 0^\circ} \\ &= \frac{1}{1} \\ &= 1 \end{aligned}$$

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

Now,

$$\begin{aligned}\sec 90^\circ &= \frac{1}{\cos 90^\circ} \\ &= \frac{1}{0} \\ &= \infty\end{aligned}$$

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

Now consider the given value

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

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

This value 2.4 lies in between 1 and  $\infty$

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  $\infty$ )

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

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

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

Therefore,

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

And

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

Therefore from equation (1) and (2), it is clear that  $\cos A$  and  $\operatorname{cosec} A$  (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

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

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

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

Therefore,

Minimum value of  $\angle \theta$  is  $0^\circ$  and

Maximum value of  $\angle \theta$  is  $90^\circ$

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

$$\sin 90^\circ = 1$$

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  $\theta$  = False

\*\*\*\*\* END \*\*\*\*\*