Trigonometry Functions - Class XI

Past Year JEE Questions

Questions

Quetion: 01

The expression $\frac{\tan A}{1-\cot A}+\frac{\cot A}{1-\tan A}$ can be written as:

A. $\sin A \cos A + 1$

B. $\sec A \cos ecA + 1$

C. $\tan A + \cot A$

D. $\sec A + \cos ecA$

Solutions

Solution: 01

Explanation

Given expression can be written as

$$\frac{\sin A}{\cos A} \times \frac{\sin A}{\sin A-\cos A}+\frac{\cos A}{\sin A} \times \frac{\cos A}{\cos A-\sin A}$$

(As $\tan A = \frac{\sin A}{\cos A}$ and $\cot A = \frac{\cos A}{\sin A}$)

$$= \frac{1}{\sin A-\cos A}\left(\frac{\sin^2 A-\cos^2 A}{\cos A \sin A}\right)$$

$$= \frac{\sin^2 A+\sin A \cos A+\cos^2 A}{\sin A \cos A}$$

$$= 1 + \sec A \operatorname{cosec} A$$