

## Trigonometric Functions - Class XI

### Related Questions with Solutions

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#### Questions

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##### Question: 01

If  $\sin \alpha = A \sin(\alpha + \beta)$ ,  $A \neq 0$

Which of the following is not the value of  $\tan(\alpha + \beta)$ ?

- A.  $\frac{\sin \beta}{\cos \beta - A}$   
B.  $\frac{\sin \alpha \cos \alpha}{A \cos \beta - \sin^2 \alpha}$   
C.  $\frac{\sin \alpha \cos \alpha}{A \cos \beta + \sin^2 \alpha}$   
D.  $\frac{\sin \beta}{\cos \beta + A}$
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#### Solutions

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##### Solution: 01

$$\begin{aligned}\tan(\alpha + \beta) &= \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta} = \frac{\frac{A \sin \beta}{1 - A \cos \beta} + \frac{\sin \beta}{\cos \beta}}{1 - \frac{A \sin \beta \sin \beta}{(1 - A \cos \beta) \cos \beta}} \text{ [From (ii)]} \\ &= \frac{A \sin \beta \cos \beta + \sin \beta - A \sin \beta \cos \beta}{\cos \beta - A \cos^2 \beta - A \sin^2 \beta} \\ &= \frac{\sin \beta}{\cos \beta - A}\end{aligned}$$

Also,  $\tan(\alpha + \beta)$

$$\begin{aligned}&= \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta} = \frac{\frac{\sin \alpha}{\cos \alpha} + \frac{\sin \alpha(1 - A \cos \beta)}{A \cos \alpha \cos \beta}}{1 - \frac{\sin^2 \alpha(1 - A \cos \beta)}{A \cos^2 \alpha \cos \beta}} \\ &= \frac{[From (iii)]}{A \cos^2 \alpha \cos \beta - \sin^2 \alpha + A \sin^2 \alpha \cos \beta} = \frac{\sin \alpha \cos \alpha}{A \cos \beta - \sin^2 \alpha}\end{aligned}$$

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#### Correct Options

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Answer:01

Correct Options: C, D