Trigonometric Functions - Class XI

Related Questions with Solutions

Questions

Quetion: 01

General solution of cos 3x tan 5x = sin 7x

A. $(2 \pi n, \frac{\pi(2 k+1)}{10}(n, k \in Z)$

B. $(\pi n, \frac{\pi(2 k+1)}{20}(n, k \in Z)$

C. $(\pi n, \frac{\pi(2 k+1)}{10}(n, k \in Z)$

D. $(2 \pi n, \frac{\pi(2 k+1)}{20}(n, k \in Z)$

Solutions

Solution: 01

2 cos 3x · sin 5x = 2 sin 7x cos 5x
⇒ sin 8x + sin 2 x = sin 12 x + sin 2x
⇒ sin 12x – sin 8 x = 0
⇒ 2 cos 10x · sin 2x = 0

$$\begin{array}{llll} \Rightarrow & 10 \mathrm{x}=[2 \mathrm{k}+1] \frac{\pi}{2} & \text { or } & 2 \mathrm{x}=\mathrm{n} \pi \\ \Rightarrow \mathrm{x}=[2 \mathrm{k}+1] \frac{\pi}{20} & \text { or } & \mathrm{x}=\frac{\mathrm{n} \pi}{2} & \text { [but } \mathrm{x} \neq[2 \mathrm{~m}+1] \pi / 2] \\ \Rightarrow \mathrm{x}=[2 \mathrm{k}+1] \frac{\pi}{20} & \text { or } & \mathrm{x}=\mathrm{n} \pi ; & \mathrm{n}, \mathrm{k} \in \mathrm{I} \end{array}$$

Correct Options

Answer:01

Correct Options: B