۱۹/۷۵ آفرین خیلی خوب نوشتی :))

نام و نام خانوادگی .... شایان هیستایل .... پاسخنامه تشریحی تکلیف شماره .... کلاس .... دوازدهم

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الف) $\cos 2x = 3\sin x - 1 \to 1 - 2\sin^2 x = 3\sin x - 1 \to 2\sin^2 x + 3\sin x - 2 = 0$

$\sin x = -2$ ×
$\sin x = \frac{1}{2}$ ✓ $\longrightarrow \sin x = \sin\frac{\pi}{6} \to x = 2k\pi + \frac{\pi}{6}$, $x = 2k\pi + \frac{5\pi}{6}$

ب) $\cos 2x + \cos x - 2 = 0 \to 2\cos^2 x - 1 + \cos x - 2 = 0$ → $\cos x = 1$, $\cos x = -\frac{3}{2}$ ×

$\cos x = 1 \longrightarrow x = 2k\pi$

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$\sin^4 x - \cos^4 x = \sin 4x \longrightarrow (\sin^2 - \cos^2)\underbrace{(\sin^2 + \cos^2)}_{1} = \sin 4x$

$\longrightarrow -\cos 2x = \sin 4x \to \underbrace{\sin 4x}_{2\cos 2x \sin 2x} + \cos 2x = 0 \to \cos 2x(2\sin 2x + 1) = 0 \to \cos 2x = 0$

$2x = k\pi + \frac{\pi}{2} \to x = \frac{k\pi}{2} + \frac{\pi}{4}$, $\sin 2x = -\frac{1}{2} \to 2x = 2k\pi - \frac{\pi}{6} \to x = k\pi - \frac{\pi}{12}$

$2x = 2k\pi - \frac{5\pi}{6} \to x = k\pi - \frac{5\pi}{12}$

ب) $2\cos^2 x + 2\sin x\cos x = 1 \to \underbrace{2\cos^2 - 1}_{\cos 2x} + \underbrace{2\sin x\cos x}_{\sin 2x} = 0 \to \sqrt{2}\sin(2x + \frac{\pi}{4}) = 0$

$\to \sin(2x + \frac{\pi}{4}) = 0 \quad 2x + \frac{\pi}{4} = k\pi \to x = \frac{k\pi}{2} - \frac{\pi}{8}$

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الف) $\cot x(2\cos x + 1) = \frac{1}{\sin x} \xrightarrow[\times \sin x]{\sin x \neq 0} \cos x(2\cos x + 1) = 1 \to 2\cos^2 x + \cos x - 1 = 0$

$\cos x = -1 \to \sin x = 0 \to \cancel{x}$

$\cos x = \frac{1}{2} \to x = 2k\pi \pm \frac{\pi}{3}$

ب) $2\sin^2 x - \sin x\cos x + \cos^2 x = 2 \xrightarrow{\div \sin^2 x} 2 - \cot x + \cot^2 x = 2\underbrace{\frac{1}{\sin^2}}_{(1 + \cot^2 x)}$

$\to \cot^2 x + \cot x = 0 \to \cot x(\cot x + 1) = 0 \to \cot x = 0 \quad x \in k\pi + \frac{\pi}{2}$

$\cot x = -1 \to x = k\pi - \frac{\pi}{4}$

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الف) $\cos(\frac{\pi}{4} + x)\underbrace{\cos(x - \frac{\pi}{4})}_{\cos(\frac{\pi}{4} - x)} = \frac{1}{4} \to \underbrace{\cos(x + \frac{\pi}{4})\sin(x + \frac{\pi}{4})}_{\frac{\sin(2x + \frac{\pi}{2})}{2}} = \frac{1}{4} \to \cos 2x = \frac{1}{2}$

هم ارز

$\to 2x = 2k\pi \pm \frac{\pi}{3} \to x = k\pi \pm \frac{\pi}{6}$

ب) $\cos(2x - \frac{\pi}{9}) = -\sin 2x = \sin(-2x) = \cos(\frac{3\pi}{2} - 2x) \to 2x - \frac{\pi}{9} = 2k\pi + \frac{3\pi}{2} - 2x$

$2x - \frac{\pi}{9} = 2k\pi - \frac{3\pi}{2} + 2x$ ×

$4x = 2k\pi + \frac{3\pi}{2} + \frac{\pi}{9} \to x = \frac{k\pi}{2} + \frac{29\pi}{72}$

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$\frac{\sin 4x + \sin 2x}{\sin 2x} - \sin^2 x = \cos^2 x \to \frac{\sin 2x(2\cos 2x + 1)}{\sin 2x}$, $\sin^2 + \cos^2 = 1$

$\longrightarrow \sin 2x \neq 0$

$2\cos 2x + 1 = 1 \longrightarrow \cos 2x = 0 \quad 2x = k\pi + \frac{\pi}{2} \to x = \frac{k\pi}{2} + \frac{\pi}{4}$

$\sin 2x \neq 0 \longrightarrow 2x \neq k\pi \to x \neq \frac{k\pi}{2} \longrightarrow$ ج. $= \frac{k\pi}{2} + \frac{\pi}{4}$

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$\frac{\sin\frac{x}{2}}{1+\cos\frac{x}{2}} = \frac{1}{\sin\frac{x}{2}} + \underbrace{\cot\frac{x}{2}}_{\frac{\cos\frac{x}{2}}{\sin\frac{x}{2}}} \to \frac{\sin\frac{x}{2}}{1+\cos\frac{x}{2}} = \tan\left(\frac{\frac{x}{2}}{2}\right) = \tan\left(\frac{x}{4}\right)$

$\frac{1+\cos\frac{x}{2}}{\sin\frac{x}{2}} = \frac{1}{\tan\frac{x}{4}} = \cot\frac{x}{4}$ ۶

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$\to \tan\frac{x}{4} = \cot\frac{x}{4} = \tan\left(\frac{\pi}{2}-\frac{x}{4}\right) \to \frac{x}{4} = k\pi + \frac{\pi}{2} - \frac{x}{4} \to \frac{x}{2} = k\pi + \frac{\pi}{2} \to x = 2k\pi + \pi$

$[-\pi, \frac{3\pi}{2}]$ $\quad -\pi, \pi \to$ اختلاف $\pi - (-\pi) = 2\pi$

$\cos^2 x - \sin^2 x \underbrace{\cos 3x}_{4\cos^3 x - 3\cos x} = 1 \to \cancel{\cos^2} - (4\cos^3 x\sin^2 x - 3\sin^2 x\cos x) = 1 = \sin^2 + \cancel{\cos^2}$

$\to \sin^2 x + 4\cos^3 x \sin^2 x - 3\sin^2 x\cos x = 0 \to \sin^2 x(4\cos^3 x - 3\cos x + 1) = 0$ ۷

$\sin^2 x = 0 \to \boxed{x = k\pi} \to 0, \pi, 2\pi$ $\quad (\cos x+1)(4\cos^2 x - 4\cos x + 1)$

$\cos x = -1 \to \boxed{x = 2k\pi + \pi} \to \pi \to$ متمایز $\quad (2\cos - 1)^2$

$\cos = \frac{1}{2} \to \boxed{x = 2k\pi \pm \frac{\pi}{3}} \to \frac{\pi}{3}\ \frac{5\pi}{3}$

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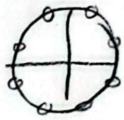
$\underbrace{\frac{1-\tan x}{1+\tan x}}_{\tan(\frac{\pi}{4}-x)} = \tan 3x \to \frac{\pi}{4} - x = k\pi + 3x \to \frac{\pi}{4} + k\pi = 4x$

$\to \tan x \neq -1$

$\to \boxed{\frac{\pi}{16} + \frac{k\pi}{4} = x}$ ۸



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$\sqrt{\underbrace{1+\sin 2x}_{(\sin+\cos)^2}} = \sqrt{2}\cos 2x \to |\sin x + \cos x| = \sqrt{2}\cos 2x$

$\sin x + \cos x \geq 0$ $\to \cancel{\sqrt{2}}\sin\left(x+\frac{\pi}{4}\right) = \cancel{\sqrt{2}}\cos 2x \to \cos\left(\frac{\pi}{4}-x\right) = \cos 2x \to 2x = 2k\pi + \frac{\pi}{4} - x$

$2x = 2k\pi - \frac{\pi}{4} + x$ ۹

$\to 3x = 2k\pi + \frac{\pi}{4} \to x = \frac{2k\pi}{3} + \frac{\pi}{12} \longrightarrow \frac{\pi}{12}, \frac{\pi}{4}$

$x = 2k\pi - \frac{\pi}{4}$ $\quad [\pi\ \ 0]$ دربازه

۲ جواب

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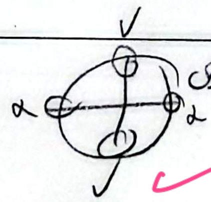
الف $\sin^4 - \cos^4 = 1$



۴ نقطه ابری

۲ جواب دار

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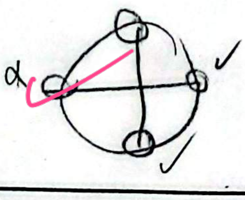
ب $\sin^3 x - \cos^3 x = -1$ ۱۰



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$0,\ 2\pi,\ \frac{3\pi}{2}$