SUBJECT:

Year: Month: Day:

۱۹٫۵ آذر

محمدصالح محمدی

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$8\cos x = \frac{1}{\cos^2 x} \longrightarrow 8\cos^3 = 1 \qquad 2\cos = 1$

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

$\rightarrow x = \pi/3$

$\rightarrow x = 5\pi/3$

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(2 ۲جواب دارد

$5\boxed{\sin^2} + \boxed{2\cos 3x} + 2 = 0$

$\rightarrow (1-\cos^2 x) \qquad 2(4\cos^3 x - 3\cos)$

$\longrightarrow \cos x = 2k\pi + \pi$ → $(2k+1)\pi$, π ✓ ; → $(2k-1)\pi$, $-\pi$ ✓

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$5 - 5\cos^2 + 8\cos^3 - 6\cos + 2 = 0$

$8\cos^3 - 5\cos^2 - 6\cos + 7 = 0 \longrightarrow \boxed{\cos x = -1}$

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$2\sin(x)(1-2\sin^2) + \sin x = 1$

$2\sin x - 4\sin^3 + \sin = 1 \longrightarrow 3\sin x - 4\sin^3 = 1$

$\sin 3x = 1 \longrightarrow 3x = 2k\pi + \pi/2 \longrightarrow x = \frac{2k\pi}{3} + \pi/6 \longrightarrow \pi/6$, $5\pi/6$, $\frac{9\pi}{6}$

مجموع جواب ها ؟

(4

$\frac{1}{\sin(\frac{\pi}{2}+2x)} + \frac{1}{\cos(\frac{\pi}{2}+4x)} = 0$

$\downarrow \cos 2x \qquad -\sin(4x)$

$\frac{1}{\cos 2x} - \frac{1}{\sin(4x)} = \cdot \qquad \sin 4x - \cos 2x = 0$

$\rightarrow \sin 4x = \cos 2x$

$\rightarrow \sin 4x = \sin(\pi/2 - 2x)$

$\rightarrow 4x = 2k\pi + \frac{\pi}{2} - 2x \rightarrow 6x = 2k\pi + \pi/2$

$\rightarrow \frac{k\pi}{3} + \frac{\pi}{12} \rightarrow \frac{\pi}{12}, \frac{5\pi}{12} \rightarrow \frac{\pi}{2} \rightarrow$ اصلن

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$\boxed{\tan\frac{2\pi}{3} = -\sqrt{3}}$ ۲/۲

یک جواب $\frac{\pi}{2}$ نودارد که باعث صفر شدن مخرج می شود و قابل تقبل نیست

(5

$\cos(\frac{\pi}{4}+x) = 1/\sqrt{3} \qquad \cos\frac{\pi}{4}\cos x - \sin\frac{\pi}{4}\sin x = \sqrt{2}/2$

$\sqrt{2}/2(\cos x - \sin x) = 1/\sqrt{3} \rightarrow \cos x - \sin x = \frac{2}{\sqrt{6}} = \frac{\sqrt{6}}{3}$ ۲

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$\frac{m\sqrt{6}}{3} - 3\sqrt{6}\sin 2x = \sqrt{6} \qquad \cancel{\cos^2 + \sin^2} - 2\sin\cos = 2/3 - 1/3$

$1/3$ $\qquad \sin 2x = 1/3$

$\frac{m\sqrt{6}}{3} = 9\sqrt{6} \longrightarrow m = 9$ ✓

$\sin(x+\frac{\pi}{4})\cos(\frac{\pi}{4}-x) = \sin(x+\frac{\pi}{4}) \times \sin(x+\frac{\pi}{4}) = 1$

$\sin(x+\frac{\pi}{4}) = \pm 1 \longrightarrow x+\pi/4 = 2k\pi + \pi/2 \longrightarrow x = 2k\pi + \frac{\pi}{4} \rightarrow x = \pi/4$

$\longrightarrow x + \frac{\pi}{4} = 2k\pi + 3\pi/2 \longrightarrow x = 2k\pi + \frac{5\pi}{4} \Rightarrow x = \frac{5\pi}{4}$

۲ جمعاً ۲ جواب دارد

Senobar

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$\sin x + \sqrt{3}\cos x = \sqrt{2} \to 2\sin(x + \frac{\pi}{3}) = \sqrt{2} \to \sin(x + \frac{\pi}{3}) = \frac{\sqrt{2}}{2}$

$x + \frac{\pi}{3} = 2k\pi + \frac{\pi}{4} \to x = 2k\pi - \frac{\pi}{12} \to \frac{23\pi}{12}$, $\frac{\pi}{12}$ ۲

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

$\frac{9\pi}{12} - \frac{4\pi}{12}$

$x = 2k\pi + \frac{3\pi}{4} - \frac{\pi}{3} \to x = 2k\pi + \frac{5\pi}{12} \to \frac{5\pi}{12} \to S = \frac{28\pi}{12}$

$-4\sin x\cos x = 1 \to -2\sin 2x = 1 \to \sin 2x = -1/2$ ۸-

$2x = 2k\pi - \frac{\pi}{6} \to x = k\pi - \frac{\pi}{12} \to \frac{11\pi}{12}$ $\frac{23\pi}{12} \to \frac{34\pi}{12}$

$\to \frac{60\pi}{12}$

$2x = 2k\pi - \frac{5\pi}{6} \to x = k\pi - \frac{5\pi}{12} \to \frac{7\pi}{12}$ $\frac{19\pi}{12}$ $\frac{26\pi}{12}$ $= 5\pi$

$2\cos^2 a - 2\cos^2 2a \; 2\cos^2 4a = 1/8 \to \cos a \cos 2a \cos 4a = 1/8$ ۹-

$\frac{\sin a}{\sin a} \underbrace{\cos a}_{}\cos 2a\cos 4a = 1/8$ ($\frac{1}{2}\sin 2a$, $\frac{1}{2}\sin 4a$, $\frac{1}{2}\sin 8a$) $\quad \frac{1}{8}\frac{\sin 8a}{\sin a} = 1/8 \quad \frac{\sin 8a}{\sin a} = 1$ ۲

$\sin 8a = \sin a \to 8a = 2k\pi + a \to 7a = 2k\pi \to a = \frac{2k\pi}{7}$

$\frac{2\pi}{7} / \frac{4\pi}{7} / \frac{6\pi}{7}$ $\quad 8a = 2k\pi + \pi - a \to 9a = 2k\pi \to a = \frac{2k\pi}{9}$

$\frac{2\pi}{9} / \frac{4\pi}{9} / \frac{8\pi}{9} / \to \max = \frac{8\pi}{9}$

$\frac{\sin 3x}{\cos 3x} \times \frac{\sin x}{\cos x} = 1 \to \sin 3x \sin x = \cos 3x \cos x$ ۱۰-

چهار جواب دارد

$\cos 3x \cos x - \sin 3x \sin x = 0$

$\cos(4x) = 0 \to 4x = k\pi + \pi/2 \to x = \frac{k\pi}{4} + \pi/8$ ۲

$\frac{9\pi}{8} / \frac{11\pi}{8} / \frac{13\pi}{8} / \frac{15\pi}{8} / = 6\pi$

$\cos 2x = 1 - 2\sin^2 x$ (فرمول طلایی) ۳

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

$\sin 3x = 1 \to 3x = 2k\pi + \frac{\pi}{2} \to x = \frac{2k\pi}{3} + \frac{\pi}{6} \xrightarrow{0 \le x \le 2\pi}$

$k = 0 \to x = \frac{\pi}{6}$, $k = 1 \to x = \frac{5\pi}{6}$, $k = 2 \to x = \frac{9\pi}{6}$

$S = \frac{\pi}{6} + \frac{5\pi}{6} + \frac{9\pi}{6} = \frac{15\pi}{6} = \boxed{\frac{5\pi}{2}}$

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