نام و نام خانوادگی ...آرین [illegible]... پاسخنامه تشریحی تکلیف شماره ...۱۷... کلاس ....

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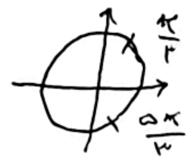
$8\cos x = 1+\tan^2 x \to 8\cos x = \frac{1}{\cos^2 x} \to \cos^3 x = \frac{1}{8} \to \cos x = \frac{1}{2}$



دو جواب ←

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$5(1-\cos^2 x)+2(4\cos^3 x-3\cos x) = -2 \to 8\cos^3 x - 5\cos^2 x - 6\cos x + 7 = 0$

$(\underbrace{8\cos^2 x - 13C + 7}_{\text{فاقد جواب}})(C+1) = 0 \to \cos x = -1 \to -\pi$ و π

دو جواب

۳

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

$\sin x = \sin\frac{\pi}{6} \to 2k\pi + \frac{\pi}{6} = x$, $2k\pi + \frac{5\pi}{6} = x$ $\Big\}$ $\frac{\pi}{6}$ و $\frac{5\pi}{6}$, $\frac{3\pi}{2}$

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

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

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

$\cos 2x = \sin 4x$

$\cos 2x = \cos(\frac{\pi}{2}-4x)$

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

$2k\pi - \frac{\pi}{2} + 4x = 2x \to x = k\pi + \frac{\pi}{4}$ $\Big\}$ $\frac{5\pi}{12}$, $\frac{\pi}{12}$ و $\frac{\pi}{4}$ $\to \frac{5\pi}{12} - \frac{\pi}{12} = \frac{\pi}{3}$

$\sin \neq 0$ غ ق ق

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

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

$\cos x - \sin x = \sqrt{\frac{2}{3}} \to \sin 2x = 1-(\cos x - \sin x)^2 = \frac{1}{3}$

$\sqrt{\frac{2}{3}}\,m - \frac{3\sqrt{6}}{3} = \sqrt{6} \Rightarrow \boxed{m = 6}$

۶

$$\cos\left(\frac{\pi}{2}-\frac{\pi}{6}-x\right)\cos\left(x-\frac{\pi}{3}\right)=1 \rightarrow \cos^2\left(\frac{\pi}{3}-x\right)=1$$

$$\cos\left(\frac{\pi}{3}-x\right)=\pm 1 \rightarrow 2k\pi+\frac{\pi}{3}=x \;,\; 2k\pi+\frac{4\pi}{3}=x \quad \Big\} \; k\pi+\frac{\pi}{3} \rightarrow \frac{\pi}{3},\frac{4\pi}{3}$$

دو جواب

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

$$\sin\left(\frac{\pi}{3}+x\right)=\sin\frac{\pi}{4} \rightarrow 2k\pi+\frac{\pi}{4}=\frac{\pi}{3}+x \rightarrow x=2k\pi-\frac{\pi}{12}$$

$$2k\pi+\frac{3\pi}{4}=\frac{\pi}{3}+x \rightarrow x=2k\pi+\frac{5\pi}{12}$$

$$-\frac{\pi}{12},\ \frac{5\pi}{12},\ \frac{23\pi}{12} \rightarrow \frac{27\pi}{12}=\boxed{\frac{9\pi}{4}}$$

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$$\sin\left(\frac{3\pi}{2}-x\right)=-\cos x$$

$$-4\sin x\cos x=-2\sin 2x=1 \rightarrow \sin 2x=-\frac{1}{2} \rightarrow \sin 2x=\sin\frac{7\pi}{6}$$

$$2k\pi+\frac{7\pi}{6}=2x \rightarrow x=k\pi+\frac{7\pi}{12} \;,\; 2k\pi+\pi-\frac{7\pi}{6}=2x \rightarrow x=k\pi-\frac{\pi}{12} \quad \Big\} \; \frac{7\pi}{12},\ \frac{19\pi}{12},\ \frac{11\pi}{12},\ \frac{23\pi}{12}$$

$$\boxed{5\pi}$$

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$$\tan x\tan 3x=1 \rightarrow \frac{\sin 3x\sin x}{\cos 3x\cos x}=1$$

$$\cos 3x\cos x-\sin 3x\sin x=\cos 4x=0 \rightarrow x=\frac{k\pi}{2}\pm\frac{\pi}{8}=\frac{(4k\pm 1)\pi}{8}$$

$$x=\frac{9\pi}{8},\ \frac{13\pi}{8},\ \frac{11\pi}{8},\ \frac{15\pi}{8} \rightarrow \boxed{6\pi}$$

جابجا

۱۰

$$(2\cos^2 x)(2\cos^2 2x)(2\cos^2 4x)=\frac{1}{8} \rightarrow (\cos x\cos 2x\cos 4x)^2=\frac{1}{64}$$

$$\times\frac{\sin^2 x}{\sin^2 x}\times\cos^2 x\times\cos^2 2x\times\cos^2 4x=\frac{\sin^2 8x}{\sin^2 x}=1 \rightarrow \sin^2 x=\sin^2 8x$$

$$\frac{2k\pi}{7}=x$$

$$\frac{2k\pi}{9}+\frac{\pi}{9}=x \longrightarrow k=4 \Rightarrow \boxed{x=\frac{9\pi}{9}} \longrightarrow x\neq\pi$$