نام و نام خانوادگی ...آرین پور فولادگر... پاسخنامه تشریحی تکلیف شماره .... کلاس ......دوازدهم ریاضی A...

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

$\to 8\cos^3 x = 1 \to 2\cos x = 1 \to \cos x = \frac{1}{2} = \cos\frac{\pi}{3} \to x = 2k\pi \pm \frac{\pi}{3}$

$\xrightarrow{D=[0,2\pi]}$ $\frac{\pi}{3}$ $\quad 2\pi - \frac{\pi}{3}$ دو جواب

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$5\sin^2 x + 2\cos(3x) = -2 \to 5\sin^2 x + 2(\cos 3x + 1) = 0$

$5\sin^2 x + 4\cos^2(\frac{3x}{2}) = 0 \xrightarrow{\sin^2 x,\ \cos^2 \geq 0} 5\sin^2 x = 0 \to \sin x = 0$ $\quad \boxed{x = k\pi}$

$4\cos^2(\frac{3x}{2}) = 0 \to \cos\frac{3x}{2} = 0$ $\quad \frac{3x}{2} = k\pi + \frac{\pi}{2} \to \boxed{x = \frac{2k\pi}{3} + \frac{\pi}{3}}$

$x = k\pi \to -\pi \quad 0 \quad \pi$

$x = \frac{2k\pi}{3} + \frac{\pi}{3} \to -\pi \quad -\frac{\pi}{3} \quad \frac{\pi}{3} \quad \pi$ $\to$ ۲ جواب

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

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مجموع؟ $\frac{\pi}{6} + \frac{5\pi}{6} = \frac{5\pi}{3}$

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

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

$\to \sin(3x) = 1 \to 3x = 2k\pi + \frac{\pi}{2} \to x = \frac{2k\pi}{3} + \frac{\pi}{6}$ $\quad \frac{\pi}{6} \quad \frac{5\pi}{6}$ دو جواب

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

زیرا $\cos 2x$ است که در مخرج است نباید صفر باشد

$\cos 2x = \sin 4x = 2\sin 2x \cancel{\cos 2x}$

$\cos 2x \neq 0 \to 2x \neq k\pi + \frac{\pi}{2} \to x \neq \frac{k\pi}{2} + \frac{\pi}{4}$

$\sin 2x = \frac{1}{2} = \sin\frac{\pi}{6}$

$2x = 2k\pi + \frac{\pi}{6} \to x = k\pi + \frac{\pi}{12} \to \frac{\pi}{12}$ ۲ ✓

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

$\to \alpha = \frac{4\pi}{12} = \frac{\pi}{3} \to \tan\frac{2\pi}{3} = -\sqrt{3}$ ✓

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$\cos(x + \frac{\pi}{4}) = \quad \to \cos x - \sin x = \frac{\sqrt{6}}{3}$

$\cos x - \sin x = \frac{\sqrt{6}}{3}$ توان ۲ $\quad \sin 2x = \frac{1}{3}$

$m \times \frac{\sqrt{6}}{3} - 3\sqrt{6} \times \frac{1}{3} = \sqrt{6}$

$\boxed{m = 6}$

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$\sin(x+\frac{\pi}{4})$

$\sin(x+\frac{\pi}{4})\cos(\cancel{x-\frac{\pi}{4}}) = 1 \longrightarrow \sin^2(x+\frac{\pi}{4}) = 1$ $\frac{\pi}{4}-x$ $\longrightarrow \sin(x+\frac{\pi}{4}) = 1 \longrightarrow x+\frac{\pi}{4} = 2k\pi+\frac{\pi}{2} \longrightarrow x = 2k\pi+\frac{\pi}{4}$ (1) $\sin(x+\frac{\pi}{4}) = -1 \longrightarrow x+\frac{\pi}{4} = 2k\pi-\frac{\pi}{2} \longrightarrow x = 2k\pi-\frac{3\pi}{4}$ (2) $\frac{\pi}{4}$ $\quad 2\pi-\frac{3\pi}{4}$ ← ۲ جواب ۲	۶
$\sin x+\sqrt{3}\cos x = \sqrt{2}$ $\quad \frac{a}{\lvert a\rvert}\sqrt{a^2+b^2}\sin(x+\alpha)$ $\tan\alpha = \frac{b}{a}$ $\sqrt{1+3}$ $\quad 2\sin(x+\alpha) \longrightarrow 2\sin(x+\frac{\pi}{3}) = \frac{\sqrt{2}}{2} \longrightarrow$ ۲ $\tan\alpha = \sqrt{3} \longrightarrow \boxed{\alpha = \frac{\pi}{3}}$ $\longrightarrow x+\frac{\pi}{3} = 2k\pi+\frac{\pi}{4} \longrightarrow x = 2k\pi+\frac{\pi}{4}-\frac{\pi}{3} \longrightarrow \frac{\pi}{4}-\frac{\pi}{3} \quad 2\pi+\frac{\pi}{4}-\frac{\pi}{3}$ $\longrightarrow x+\frac{\pi}{3} = 2k\pi+\pi-\frac{\pi}{4} \longrightarrow x = 2k\pi+\pi-\frac{\pi}{4}-\frac{\pi}{3} \quad \pi-\frac{\pi}{4}-\frac{\pi}{3} \xrightarrow{\text{مجموع}} \frac{9\pi}{4}$	۷
$4\sin x\sin(\frac{3\pi}{2}-x) = 1 \longrightarrow -4\sin x\cos x = 1 \longrightarrow -2\sin 2x = 1$ $-\cos x$ $\longrightarrow \sin 2x = -\frac{1}{2} = \sin(-\frac{\pi}{6}) \longrightarrow 2x = 2k\pi-\frac{\pi}{6} \longrightarrow x = k\pi-\frac{\pi}{12}$ (1) $\longrightarrow 2x = 2k\pi+\pi+\frac{\pi}{6} = \frac{7\pi}{6} \longrightarrow x = k\pi+\frac{7\pi}{12}$ (2) (1) ۲ جواب $\longrightarrow \pi-\frac{\pi}{12} \quad 2\pi-\frac{\pi}{12}$ (2) ۲ جواب $\longrightarrow \pi+\frac{7\pi}{12} \quad \frac{7\pi}{12} \xrightarrow{\text{مجموع}} 5\pi$ ۲	۸
$(1+\cos(2\alpha))(1+\cos(4\alpha))(1+\cos(8\alpha)) = \frac{1}{8}$ $2\cos^2\alpha \quad 2\cos^2 2\alpha \quad 2\cos^2 4\alpha$ $\longrightarrow (\cos^2\alpha)(\cos^2 2\alpha)(\cos^2 4\alpha) = \frac{1}{64} \longrightarrow \frac{(\sin^2\alpha\cos^2\alpha)(\cos^2 2\alpha)(\cos^2 4\alpha)}{\sin^2\alpha} = \frac{1}{64}$ ۲ $\frac{1}{4}\sin^2 2\alpha$ $\frac{(\sin^2 2\alpha\cos^2 2\alpha)\cos^2 4\alpha}{\sin^2\alpha} = \frac{1}{16} \longrightarrow \frac{\frac{1}{4}\sin^2 8\alpha}{\sin^2\alpha} = \frac{1}{4} = 1 \longrightarrow \sin^2 8\alpha = \sin^2\alpha$ $\longrightarrow \frac{1-\cos 16\alpha}{2} = \frac{1-\cos 2\alpha}{2} \longrightarrow \cos 16x = \cos 2x$ $8 = \frac{k\pi}{7}$ $\alpha = \frac{k\pi}{9} \longrightarrow \frac{8\pi}{9} =$ بزرگترین	۹
$\tan(3x)\tan(x) = 1 \longrightarrow \tan 3x = \frac{1}{\tan x}\ \cot x = \tan(\frac{\pi}{2}-x)$ $3x = k\pi+\frac{\pi}{2}-x \longrightarrow 4x = k\pi+\frac{\pi}{2} \longrightarrow x = \frac{2k\pi}{8}+\frac{\pi}{8}$ ۲ $\longrightarrow \frac{9\pi}{8} \quad \frac{11\pi}{8} \quad \frac{13\pi}{8} \quad \frac{15\pi}{8}$ مجموع $\frac{48\pi}{8} = 6\pi$	۱۰