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

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$8\cos x = 1+\tan^2 x \Rightarrow 8\cos x = \frac{1}{\cos^2 x} \xRightarrow{\cos^2 x \neq 0} 8\cos^3 x = 1 \Rightarrow$

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

$\Rightarrow x = 2k\pi - \frac{\pi}{3} \to \frac{5\pi}{3}$ } ۲ جواب

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

$\Rightarrow 3\sin x - 4\sin^3 x = 1 \Rightarrow \sin 3x = 1 = \sin\frac{\pi}{2}$

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

$\to 3x = 2k\pi + \pi - \frac{\pi}{2} \to x = \frac{2k\pi}{3} + \frac{\pi}{6}$ } $\to \left\{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{3\pi}{2}\right\}$ ۳ جواب

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$\frac{1}{\sin\left(\frac{\pi+4x}{2}\right)} = \frac{-1}{\cos\left(\frac{\pi}{2}+4x\right)} \xRightarrow{\sin 4x \neq 0} \cancel{-}\sin 4x = \cancel{-}\sin\left(\frac{\pi}{2}+2x\right)$

$\Rightarrow 4x = 2k\pi + \frac{\pi}{2} + 2x \to 2x = 2k\pi + \frac{\pi}{2} \to x = k\pi + \frac{\pi}{4} \to \frac{\pi}{4}$ غ ق ق $\sin 4\left(\frac{\pi}{4}\right) = 0$

$\Rightarrow 4x = 2k\pi + \pi - \frac{\pi}{2} - 2x \to 6x = 2k\pi + \frac{\pi}{2} \Rightarrow x = \frac{2k\pi}{3} + \frac{\pi}{12} \Rightarrow x = \frac{\pi}{12}, \frac{5\pi}{12}, \frac{9\pi}{12}$

$\tan\frac{2\pi}{3} = \frac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = -\sqrt{3}$ $\qquad \frac{\pi}{3}$ = اختلاف

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$x(\cos x - \sin x) = \sqrt{6}(1+2\sin 2x) \to -\sqrt{2}\,x\,\sin\left(x-\frac{\pi}{4}\right) = \sqrt{6}(1+2\sin 2x)$

$\frac{\sqrt{3}}{2} = \cos\left(x+\frac{\pi}{4}\right)$

$-\frac{\cancel{\sqrt{6}}\,x}{3} = \cancel{\sqrt{6}}(1+2\sin 2x)$

$\sin\left(x-\frac{\pi}{4}\right) = \frac{\sqrt{3}}{3} \Rightarrow \sin x\cos\frac{\pi}{4} - \sin\frac{\pi}{4}\cos x = \frac{\sqrt{3}}{3}$

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

$\sin(x+\frac{\pi}{6})\cos(x-\frac{\pi}{3}) = 1$

$\to \sin(\frac{\pi}{2} + \underbrace{x-\frac{\pi}{3}}_{a}) \cdot \cos(\underbrace{x-\frac{\pi}{3}}_{a}) = \sin(x+\frac{\pi}{6})$ $\Big\} \to \sin(x+\frac{\pi}{6}) = \pm 1$ ۶

$\sin(x+\frac{\pi}{6}) = +1 \xrightarrow{a} x+\frac{\pi}{6} = 2k\pi + \frac{\pi}{2} \Rightarrow x = 2k\pi + \frac{\pi}{3} \to \frac{\pi}{3}$

$\sin(x+\frac{\pi}{6}) = -1 \to x+\frac{\pi}{6} = 2k\pi - \frac{\pi}{2} \to x = 2k\pi - \frac{2\pi}{3} \to \frac{4\pi}{3}$ $\Big\}$ جواب

$a\sin x + b\cos x = \cancel{\left|\frac{a}{|a|}\right|}\sqrt{\underset{1+3}{a^2+b^2}}\,\sin(x+\underset{\frac{\pi}{6}}{\cancel{\alpha}}) \to 2\sin(x+\frac{\pi}{6}) = 1$

$\tan\alpha = \frac{b}{a} = \frac{\sqrt{3}}{3} \to \alpha = \frac{\pi}{6}$ $\{-\frac{2\pi}{3}, 0, \frac{2\pi}{3}, 2\pi\}$:جواب‌ها ۷

$0, 2\pi$

$\Rightarrow \sin(x+\frac{\pi}{6}) = \frac{1}{2} = \sin\frac{\pi}{6} \to x+\frac{\pi}{6} = 2k\pi + \frac{\pi}{6} \Rightarrow 2k\pi = x \to$ $-\frac{2\pi}{3}$ $\frac{2\pi}{3}$

$\to x+\frac{\pi}{6} = 2k\pi + \frac{5\pi}{6} \to x = 2k\pi + \frac{2\pi}{3}$

$4\sin x\,\underbrace{\sin(\frac{3\pi}{2} - x)}_{-\cos x} = 1 \Rightarrow -4\sin x\cos x = 1$

$\to -2\sin 2x = 1 \to \sin 2x = -\frac{1}{2} = \sin\frac{7\pi}{6}$ $\{-\frac{\pi}{12}, \frac{7\pi}{12}, \frac{11\pi}{12}\}$ ۸

$\to 2x = 2k\pi + \frac{7\pi}{6} \to x = k\pi + \frac{7\pi}{12} \to \frac{7\pi}{12}$ جواب

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

$(1+\cos 2a)(1+\cos 4a)(1+\cos 8a) = \frac{1}{8}$

$\frac{\sin^2 a}{\sin^2 a} \times (2\cos^2 a)\cancel{(2\cos^2 2a)}(2\cos^2 4a) = \frac{1}{8}$ $\sin^2 8a = \frac{1}{8}$ ۹

$(\frac{\sin^2 4a}{\cancel{4}})\cancel{(2\cos^2 4a)}$

$\dots 4\sin^2 a\cos^2 a$

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

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