۲۰ آفرین

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

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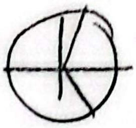
$8\cos x - \tan^2 x = 1 \to 8\cos x = 1+\tan^2 x = \frac{1}{\cos^2 x} \to 8\cos^3 x = 1$

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



در بازه $[0, 2\pi]$ ۲ جواب دارد

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$5\sin^2 x + 2\cos 3x = -2 \to 8\cos^3 x - 5\cos^2 x - 6\cos x + 7 = 0$

($\sin^2 x = 1-\cos^2 x$ ، $\cos 3x = 4\cos^3 x - 3\cos x$)

$\to (\cos x + 1)(8\cos^2 x - 13\cos x + 7) = 0 \to \cos x = -1$ ($\Delta < 0$)

$\to x \in -\pi, \pi$ ۲ جواب

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

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

$\sin x = -1 \quad 2k\pi - \frac{\pi}{2} \xrightarrow{[0, 2\pi]} \frac{3\pi}{2}$

$\sin x = \frac{1}{2} \quad 2k\pi + \frac{\pi}{6} \to \frac{\pi}{6}$, $2k\pi + \frac{5\pi}{6} \to \frac{5\pi}{6}$

جمع: $\frac{\pi}{6} + \frac{5\pi}{6} + \frac{3\pi}{2} = 2{,}5\pi$

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

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

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

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

$x = \frac{k\pi}{3} + \frac{\pi}{12} \xrightarrow{[0, \pi]} \frac{\pi}{12}, \frac{5\pi}{12}, \frac{9\pi}{12}$ (غیرمجاز) $\to$ اعلان $\frac{5\pi}{12} - \frac{\pi}{12} = \frac{4\pi}{12} = \frac{\pi}{3}$

جمع را صفر کرده $\tan 2x = -\sqrt{3}$

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$m(\cos x - \sin x) - 3\sqrt{6}\sin 2x = \sqrt{6}$

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

$\cos x - \sin x = \frac{\sqrt{6}}{3} \to -\sqrt{2}\sin(x - \frac{\pi}{4}) = \frac{\sqrt{6}}{3} \to \sin(x - \frac{\pi}{4}) = -\frac{\sqrt{3}}{3} \to \cos 2\theta$, $\cos(2x - \frac{\pi}{2}) = \sin 2x$

$= 1 - 2\sin^2\theta = 1 - 2 \times \frac{1}{3} = \frac{1}{3} \to m \times \frac{\sqrt{6}}{3} - 3\sqrt{6} \times \frac{1}{3} = \sqrt{6}$

$\to \frac{m}{3} - 1 = 1 \to m = 6$

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$\sin(\alpha+\frac{\pi}{6}) / \cos(\alpha-\frac{\pi}{3}) = 1 \to 1 \cdot \cos(\frac{\pi}{3}-\alpha) = 1 \to \cos(\frac{\pi}{3}-\alpha) = \pm 1$

$\cos(\frac{\pi}{3}-\alpha)$

$\frac{\pi}{3}-\alpha = 2k\pi \to \alpha = 2k\pi+\frac{\pi}{3} \to \frac{\pi}{3}$ — ۲ جواب دارد

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

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$\sin\alpha+\sqrt{3}\cos\alpha = \sqrt{2} \to \sqrt{3+1}\,\sin(\alpha+\frac{\pi}{3}) = \sqrt{2}$

$\to 2\sin(\alpha+\frac{\pi}{3}) = \frac{\sqrt{2}}{2} = \sin(\frac{\pi}{4})$ $\quad \alpha+\frac{\pi}{3} = 2k\pi+\frac{\pi}{4} \to \alpha = 2k\pi-\frac{\pi}{12}$

$\alpha+\frac{\pi}{3} = 2k\pi+\frac{3\pi}{4} \to \alpha = 2k\pi+\frac{5\pi}{12}$

$\to -\frac{\pi}{12}, \frac{23\pi}{12}$

$\to \frac{5\pi}{12}$ $\to$ مج. $\frac{4\pi}{12}+\frac{23\pi}{12} = \frac{27\pi}{12} = \boxed{\frac{9\pi}{4}}$

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$4\sin\alpha\sin(\frac{3\pi}{2}-\alpha) = 1$ (با $\sin(\frac{3\pi}{2}-\alpha) = -\cos\alpha$) $\to -2\sin2\alpha = 1 \to \sin2\alpha = -\frac{1}{2} = \sin(-\frac{\pi}{6})$

$2\alpha = 2k\pi-\frac{\pi}{6} \to \alpha = k\pi-\frac{\pi}{12} \to \frac{11\pi}{12}, \frac{23\pi}{12}$

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

مج. $\to \boxed{5\pi}$

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$(1+\cos2\alpha)(1+\cos4\alpha)(1+\cos8\alpha) = \frac{1}{8}$

$\to 2\cos^2\alpha \times 2\cos^2 2\alpha \times 2\cos^2 4\alpha \to (\cos\alpha \times \cos2\alpha\cos4\alpha)^2 = \frac{1}{64}$

$(\frac{\sin\alpha}{\sin\alpha}\cos\alpha\cos2\alpha\cos4\alpha)^2 = \frac{1}{64} \to (\frac{\sin8\alpha}{8\sin\alpha})^2 = \frac{1}{64} \to \sin^2 8\alpha = \sin^2\alpha$

$\sin8\alpha = \sin\alpha$
$\sin8\alpha = \sin(-\alpha)$ — سال دهم جواب $\to$ $\max = \frac{8\pi}{9}$

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$\tan3\alpha \times \tan(\alpha) = 1 \to \tan3\alpha = \frac{1}{\tan(\alpha)} = \cot\alpha = \tan(\frac{\pi}{2}-\alpha)$

$3\alpha = k\pi+\frac{\pi}{2}-\alpha \to \alpha = \frac{k\pi}{4}+\frac{\pi}{8} \xrightarrow{[\pi, 2\pi]} \frac{9\pi}{8}, \frac{11\pi}{8}, \frac{13\pi}{8}, \frac{15\pi}{8}$

مج. $= \frac{48\pi}{8} = \boxed{6\pi}$