تکلیف ۲۸
یازدهم سپهر ۵

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۱

$\frac{1}{\sqrt{\cos^2 a}} - \frac{1}{\cot a} = \frac{1-\sin a}{|\cos a|}$

$\frac{1}{|\cos a|} - \frac{\sin a}{\cos a} = \frac{1-\sin a}{|\cos a|}$ $\cos a > 0$ ✓

$\frac{\sin a}{\cos a} = \cos a \to +$

$\frac{}{\sqrt{1-\cos^2 a}} \to \frac{\sin a}{\cos a} > 0 \xrightarrow{\cos a > 0} \sin a > 0$

ناحیه اول

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$-\frac{\pi}{12} < x < \frac{5\pi}{12}$ $\sin 2x = \frac{m-1}{4}$

$-\frac{\pi}{6} < 2x < \frac{5\pi}{6}$ $-\frac{1}{2} < \sin 2x \leq 1 \to -\frac{1}{2} < \frac{m-1}{4} \leq 1 \to -\frac{1}{2} < \frac{m-1}{4} \to -2 < m-1 \to m > -1$

$\frac{m-1}{4} \leq 1 \to m-1 \leq 4 \to m \leq 5$ (گزینه ۲)

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$\tan x + \cot x = -4$ $3\pi < 4x < 4\pi$

$\frac{\sin x}{\cos x} + \frac{\cos x}{\sin x} \to \frac{1}{\sin x \cos x} = -4 \to \sin x \cos x = -\frac{1}{4}$ / $\sin x + \cos x = t$

$\frac{1}{\sin^3 x + \cos^3 x} \to (\sin x + \cos x)(1 - \sin x \cos x) = \frac{1}{(\sin x + \cos x)\frac{5}{4}}$

$t^2 = 1 + 2\sin x \cos x = \frac{1}{2} \to \frac{3\pi}{4} < x < \pi$

$\to \frac{1}{\frac{5}{4} t} \to \frac{4}{5t} \to \frac{4}{5} \times -\sqrt{2} \to -\frac{4\sqrt{2}}{5}$

$-\frac{\sqrt{2}}{2} = t$

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$\cos\theta = 0/6 = \frac{x}{5} \to x = 3$ $\sin^2 x + \cos^2 x = 1 \to \sin x = 0/8$

$\sin\theta = 0/8 = \frac{y}{5} \to y = 4 = h$ $\frac{4(8+2)}{2} \to 20$

$2 + 3 + 3 = 8$

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$\tan 285 + \tan -165 - \sin 1095 \cos^2 55 = k\cos^2 15$

$\tan(\frac{3\pi}{2}+15) . \tan(-\pi+15) - \sin(6\pi+15) . \cos(\frac{3\pi}{2}-15) \to -\cot 15 . \tan 15 - \sin 15 . -\sin 15$

$-1 + \sin^2 15 = -\cos^2 15$

-1 جواب

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$A = \sqrt{3}\cos 210 . \sin 243 - \sqrt{3}\sin 240 \cos 153 \to -\frac{3}{2}\sin 243 - \cos 153 \to +\frac{3}{2}\cos 27 + \cos 27 \to +\frac{5}{2}\cos 27$

$-\frac{\sqrt{3}}{2}$ $\frac{\sqrt{3}}{2}$

$\sin(\frac{3\pi}{2} - 27) \to -\cos 27$ $\cos(\pi - 27) \to -\cos 27$

$\frac{5}{2}\cos 27$

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$f(x) = 16\cos^2(3x)\cos^2(6x)\cos^2(12x)\cos^2(24x) \to \frac{3}{4}\cos^2(\frac{\pi}{12})$

$f(\frac{\pi}{3}) \to \times \sin^2(3x) \to 16(\cos^2 x . \sin^2 x)^2 \ldots$ $\to \frac{1}{4}\sin^2 12x$

$\frac{\sin^2 6x}{2}$ / $\sin^2(3x)$ $\to \frac{4\sin^2 6x \cos^2 6x \ldots}{\sin^2(3x)}$

$\frac{\sin^2 12x \cos^2 12x \ldots}{\sin^2(3x)} \Rightarrow \frac{\frac{1}{4}\sin^2(24x) . \cos^2(24x)}{\sin^2(3x)}$ $\frac{\frac{1}{16}\sin^2(48x)}{\sin^2(3x)}$ $f(\frac{\pi}{36}) \to \frac{1}{16} \times \frac{\sin^2(\frac{4\pi}{3})}{\sin^2(\frac{\pi}{12})}$

$\frac{1}{16} \times \frac{3}{(\sqrt{6}-\sqrt{2})^2}$ → $\frac{3}{16(\sqrt{6}-\sqrt{2})^2}$ → جواب آخر

امیرمحمد عرفانی

$\frac{1-\sin x}{1+\sin x} = ۴$ $\tan\frac{x}{۲} = ?$ $\sin^۲ x + \cos^۲ x = ۱$ ۸

$\to ۴ + ۴\sin x = 1 - \sin x \to ۵\sin x = -۳ \to \sin x = -\frac{۳}{۵}$ $\frac{۹}{۲۵}$

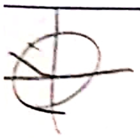
$\tan x = \frac{۲\tan\frac{x}{۲}}{1 - \tan^۲(\frac{x}{۲})} \Rightarrow \frac{۳}{۴} = \frac{۲t}{1-t^۲} \to ۳t^۲ + ۸t - ۳ = ۰ \to ۳t^۲ + ۸t - ۳ = ۰ \to (t+۳)(۳t-۱) = ۰$ $-\frac{۴}{۵} = \cos x$ $\tan x = \frac{۳}{۴}$

$\tan(\frac{x}{۲}) = t$

$\boxed{-۳ \checkmark}$ $t < ۰$ $\frac{\pi}{۲} < \frac{x}{۲} < \frac{۳\pi}{۴}$ $\pi < x < \frac{۳\pi}{۲}$ (ربع سوم) $\Leftarrow$ $-۳ = -\frac{۹}{۳}$, $\frac{۱}{۳}$

$\frac{\sin\theta}{1-\cos\theta} + \frac{1+\cos\theta}{\sin\theta} \to \frac{\sin^۲\theta + 1 - \cos^۲\theta}{\sin\theta - \cos\theta\sin\theta} \to \frac{۲\sin^۲\theta}{\sin\theta(1-\cos\theta)} \to \frac{۲\sin\theta}{1-\cos\theta} = \frac{۲(۲\sin\frac{\theta}{۲}\cos\frac{\theta}{۲})}{1-(1-۲\sin^۲\frac{\theta}{۲})}$ ۹

$\to \frac{۲\times۲\sin\frac{\theta}{۲}\cos\frac{\theta}{۲}}{۲\times\sin^۲(\frac{\theta}{۲})} \to ۲\cot\frac{\theta}{۲} \to \boxed{k = ۲}$



$\sin a = \frac{\sqrt{۲}}{۱۰}$ $\cos(\frac{۱۱\pi}{۴} + a) \Rightarrow \cos(\frac{۳\pi}{۴} + a) \to -\frac{\sqrt{۲}}{۲} \times -\frac{۷\sqrt{۲}}{۱۰} - \frac{\sqrt{۲}}{۱۰} \times \frac{\sqrt{۲}}{۲}$ ۱۰

$\boxed{\frac{۳}{۵} = \frac{۶}{۱۰}}$