موضوع: مهدی کاظمی یازدهم بسرB

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

$\cos\alpha > 0$ ②

$\cot\alpha = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} \rightarrow \frac{\sin\alpha}{\cos\alpha} = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} \rightarrow \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} > 0$

$\frac{\sin\alpha}{\cos\alpha} > 0 \rightarrow \sin\alpha > 0$

$\cos\alpha > 0$

ناحیه اول

$-\frac{\pi}{12} < m < \frac{9\pi}{12}$ ②

$-\frac{\pi}{6} < 2m < \frac{9\pi}{6}$

$\sin 2m = \frac{m-1}{4}$ ②

$-\frac{1}{2} < \sin 2m < 1 \rightarrow -\frac{1}{2} < \frac{m-1}{4} < 1$ (دقت!)

$-2 < m-1 < 4$

$-1 < m < 5 \rightarrow [-1, 5]$

$-2 < m-1 \quad m-1 < 4$

$-1 < m \quad m < 5$

$\tan m + \cot m = -2$ ②

$3\pi < 2m < 4\pi$

$\frac{\sin m}{\cos m} + \frac{\cos m}{\sin m} \rightarrow \frac{1}{\sin\cos m} = -2 \rightarrow \sin m \cos m = -\frac{1}{2}$ ②

$\frac{1}{\sin^2 m + \cos^2 m} \rightarrow (\sin m + \cos m)(1 - \sin\cos m) = \frac{1}{(\sin m + \cos m)^2}$

$\sin m + \cos m = t \rightarrow t(1 - \sin\cos m) = \frac{1}{t^2}$

$t + 2\sin\cos m = \frac{1}{t^2} \rightarrow t^3 + 2t\sin\cos m = 1$

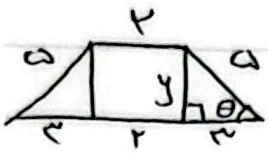
$\frac{3\pi}{4} < m < 2\pi$

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

$\rightarrow \frac{1}{\frac{3}{4} + 1} \rightarrow \frac{2}{\frac{7}{4}} \rightarrow \frac{8}{7} + -\sqrt{2} \rightarrow -\frac{8\sqrt{2}}{7}$

دانوین

موضوع: ..... تاریخ: / /



$\cos\theta = 0/6 = \frac{x}{5} \rightarrow x = 3$ (۴)

$\sin\theta = 0/8 = \frac{y}{5} \rightarrow y = 4 = h$

$\sin^2 x + \cos^2 x = 1 \rightarrow \sin x = 0/8$ (۲)

$\frac{4(8+2)}{2} = 20$ ✓

$\tan(240^\circ)\tan(-140^\circ) - \sin(1590^\circ)\cos(2250^\circ) =$ (۵) (۲)

$\tan\left(\frac{3\pi}{4} + 10\right)\tan(-\pi + 10) - \sin(4\pi + 10)\cos\left(\frac{3\pi}{2} - 10\right) =$

$-\cot 10 \tan 10 - (\sin 10 - \sin 10) + \sin^2 10 = -\cos^2 10$

$1 - 2 = -1$ ✓

$A = \sqrt{3}\cos(210^\circ)\sin(150^\circ) - \sqrt{2}\sin(135^\circ)\cos(180^\circ)$ (۶)

$-\frac{\sqrt{3}}{2}$ $\quad -\cos 30$ $\quad \frac{\sqrt{2}}{2}$ $\quad -\cos(\pi - 45)$

$\frac{3}{2} + 1 = \frac{+5}{2}$ (۱/۷۵)

$f\left(\frac{\pi}{24}\right)$ $\quad f(x) = 16\cos^2(3x)\cos^2(6x)\cos^2(12x)$ (۷)

$\cos^2(12x)\cos^2(24x)$

$\sin^2(3x) \rightarrow 16(\cos^2 x \sin^2 x)^2 \rightarrow 4\sin^2 x \cos^2 x = \frac{1}{2}\sin^2 2x$

$\frac{\sin x}{2}$ $\quad \sin^2(2x)$ $\quad \frac{4\sin^2 x \cos^2 x}{\sin^2(4x)}$

$\frac{1}{2}\sin^2(24x)\cos^2(48x) \rightarrow \frac{1}{16}\frac{\sin^2(48x)}{\sin^2(8x)}$ (۱)

$\frac{3}{\sqrt{6-\sqrt{2}}^2} \leftarrow \frac{1}{16} \times \frac{3}{\sqrt{6-\sqrt{2}}^2}$

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موضوع: مثلثات

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(۸)

$\frac{1-\sin m}{1+\sin m} = 4$ ربع سوم ← m

$\tan\frac{m}{2}$

$4+4\sin m = 1-\sin m - 4\sin m \Rightarrow -3 = -3\sin m \Rightarrow \sin m = \frac{3}{5}$

$\cos m = -\frac{4}{5}$

$\tan m = \frac{3}{4}$

$\tan m = \frac{2\tan\frac{m}{2}}{1-\tan^2\frac{m}{2}} \rightarrow \frac{3}{4} = \frac{2t}{1-t^2} \rightarrow 3t^2+4t-3=0$

$(t+3)(t-\frac{1}{3}) = 0$

$t = \frac{1}{3}$ $\quad t = -3$ $\quad \pi < m < \frac{3\pi}{2} \rightarrow \frac{\pi}{4} < \frac{m}{4} < \frac{3\pi}{8}$ ← $\tan\frac{m}{4} < 1$

(۹)

$\frac{\sin\theta}{1-\cos\theta} + \frac{1+\cos\theta}{\sin\theta}$ ← حاصل $K\cot\frac{\theta}{2}$

$K = ?$

$\frac{\sin^2\theta + 1 - \cos^2\theta}{\sin\theta - \cos\theta\sin\theta} \rightarrow \frac{2\sin^2\theta}{\sin\theta(1-\cos\theta)} \rightarrow \frac{2\sin\theta}{1-\cos\theta}$

$\frac{2(2\sin\frac{\theta}{2}\cos\frac{\theta}{2})}{1-(1-2\sin^2\frac{\theta}{2})} \rightarrow 2\cot\frac{\theta}{2} \Rightarrow K = 2$

(۱۰)

α ← ربع اول $\quad \sin\alpha = \frac{\sqrt{11}}{10}$

$\cos(\frac{11\pi}{4}+\alpha) \Rightarrow \cos(2\pi+\frac{3\pi}{4}+\alpha) \rightarrow -\frac{\sqrt{2}}{2} \times \frac{-\sqrt{11}}{10}$

$-\frac{\sqrt{2}}{10} \times \sqrt{\frac{11}{2}} \rightarrow \frac{\sqrt{11}}{5}$ ← جواب

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$$f\left(\frac{\pi}{۲۴}\right) = ۱۶\cos^۲\left(\frac{\pi}{۱۲}\right)\cos^۲\left(\frac{\pi}{۶}\right)\cos^۲\left(\frac{\pi}{۴}\right)\cos^۲\left(\frac{۲\pi}{۳}\right)$$

$$\cos^۲\frac{\pi}{۱۲} = \frac{۱+\cos\frac{\pi}{۶}}{۲} = \frac{۱+\frac{\sqrt{۳}}{۲}}{۲} \rightarrow \cos^۲\frac{\pi}{۱۲} = \frac{۲+\sqrt{۳}}{۴}$$

$$f\left(\frac{\pi}{۲۴}\right) = ۱۶\left(\frac{۲+\sqrt{۳}}{۴}\right)\times\frac{۳}{۴}\times\frac{۱}{۴}\times\frac{۱}{۴} = \boxed{\frac{۳(۲+\sqrt{۳})}{۱۶}}$$