امیرحسین ... یازدهم ریاضی ۸

۱۹,۲۵

(۱) (۲)

$\frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1-\sin\alpha}{|\cos\alpha|} \Rightarrow \cos\alpha > 0$

$\cot\alpha = \frac{\cos\alpha}{|\sin\alpha|} \Rightarrow \cot\alpha > 1$ $\longrightarrow$ $\cos\alpha > 0$, $\sin\alpha > 0$ $\longrightarrow$ (۱)

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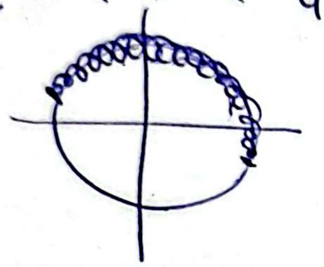
(۲) (۲)

$-\frac{\pi}{6} < 2x < \frac{5\pi}{6} \Rightarrow -\frac{1}{2} < \sin 2x \le 1 \Rightarrow -\frac{1}{2} < \frac{m-1}{4} \le 1$



$-2 < m-1 \le 4$

$\Rightarrow \boxed{-1 < m \le 5}$ دقت!

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(۳) (۲)

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

$(\sin x + \cos x)^2 = 1 + 2\sin x\cos x \to \sqrt{\frac{1}{2}} = \sin x + \cos x$

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

$\frac{1}{(\frac{-1}{\sqrt{2}})(1+\frac{1}{4})} = -\frac{4}{5}\sqrt{2}$ ✓

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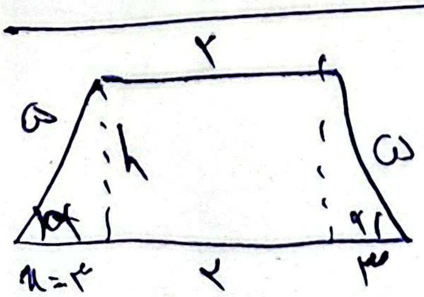
(۴) (۲)



$\cos\alpha = \frac{6}{10} \to \frac{x}{5} = 0/6 \to x = 3$

$\to a^2 + b^2 = c^2 \Rightarrow h = 4$

$S = \frac{(2+8)4}{2} = 20$ ✓

امیرحسین یزدخواستی دهم سر A کدری

(۵) $-\tan(\frac{3\pi}{2}+15)\tan(\pi-15)-\sin(4\pi+15)\cos(\frac{3\pi}{2}-15)=$ (۲)

$(\cot 15)(-\tan 15) \to +\sin 15\sin 15=-1+\sin^2 15=$

$-(\sin^2 15+\cos^2 15)=-1$ ✓

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(۶) $A=\sqrt{3}\times(-\frac{\sqrt{3}}{2})\sin(\frac{3\pi}{2}-2\alpha)-(\frac{\sqrt{2}}{1}\times\frac{\sqrt{2}}{2})\cos(\pi-2\alpha)=$ (۲)

$\frac{3}{2}\cos 2\alpha+\cos 2\alpha=\frac{5}{2}\cos 2\alpha$

$\frac{\frac{5}{2}\cos 2\alpha}{\cos 2\alpha}=\frac{5}{2}$ ✓

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(۷) $f(\frac{\pi}{24})=16\cos^2(\frac{\pi}{12})\cos^2(\frac{\pi}{6})\cos^2(\frac{\pi}{3})\cos^2(\frac{2\pi}{3})$ (۲)

$=16(\frac{1+\cos(\frac{\pi}{6})}{2})\cos^2(\frac{\pi}{6})\cos^2(\frac{\pi}{3})\cos^2(\frac{2\pi}{3})=$

$16(\frac{2+\sqrt{3}}{4})(\frac{\sqrt{3}}{2})^2(\frac{1}{2})^2(\frac{1}{2})^2=\frac{6+3\sqrt{3}}{16}$ ✓

دقت!

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(۸) $4+4\sin x=1-\sin x \Rightarrow 5\sin x=-3$ (۱٫۷۵)

$\Rightarrow \sin x=\frac{-3}{5}$ ✓ , $\cos x=\frac{-4}{5}$ ✓

$\Rightarrow \tan\frac{x}{2}=-\sqrt{\frac{1-\cos x}{1+\cos x}}=-\sqrt{\frac{\frac{9}{5}}{\frac{1}{5}}}=-\sqrt{9}=-3$

$\pi<x<\frac{3\pi}{2}\to\frac{\pi}{2}<\frac{x}{2}<\frac{3\pi}{4}\xrightarrow{\text{ناحیه دوم}}\tan\frac{x}{2}<0$

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(۹)   (۲)

$$\frac{2\sin\frac{\theta}{2}\cos\frac{\theta}{2}}{2\sin^2\frac{\theta}{2}} = \frac{\cos\frac{\theta}{2}}{\sin\frac{\theta}{2}} = \cot\frac{\theta}{2}$$

$$\frac{2\cos^2\frac{\theta}{2}}{2\sin\frac{\theta}{2}\cos\frac{\theta}{2}} = \frac{\cos\frac{\theta}{2}}{\sin\frac{\theta}{2}} = \cot\frac{\theta}{2}$$

$$\Longrightarrow 2\cot\frac{\theta}{2}$$

$$\boxed{k=2}\ ✓$$

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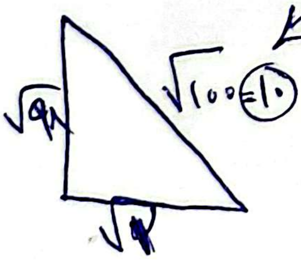
(۱۰)

$$\cos\left(\frac{11\pi}{4}+\alpha\right) = \cos\left(\frac{8\pi}{4}+\frac{3\pi}{4}+\alpha\right) = \cos\left(\frac{3\pi}{4}+\alpha\right)$$

$$= \cos\left(\frac{3\pi}{4}\right)\cos\alpha - \left(\sin\frac{3\pi}{4}\sin\alpha\right) \Rightarrow \sin\alpha = \frac{\sqrt{2}}{10}$$

(۱/۵)

α ناحیه دوم است!



$$\Rightarrow \cos\alpha = \frac{-\sqrt{98}}{10}$$

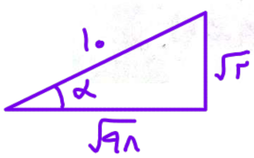
$$\Rightarrow \left(\frac{-\sqrt{2}}{2}\times\frac{-\sqrt{98}}{10}\right) - \left(\frac{\sqrt{2}}{2}\times\frac{\sqrt{2}}{10}\right) =$$

$$\frac{-\sqrt{196}}{20} - \frac{2}{20} = \frac{-14}{20} - \frac{2}{20} = \frac{-16}{20} = \frac{-8}{10}$$

$$\boxed{\frac{6}{10}}$$

$$\cos\left(\frac{11\pi}{4}+\alpha\right) = \cos\left(3\pi-\frac{\pi}{4}+\alpha\right) = -\cos\left(\alpha-\frac{\pi}{4}\right)$$

$$= -\left(\cos\alpha\cos\frac{\pi}{4}+\sin\alpha\sin\frac{\pi}{4}\right) = -\frac{\sqrt{2}}{2}\left(\cos\alpha+\sin\alpha\right)$$



$$\xrightarrow{\text{ناحیه دوم}} \cos\alpha = \frac{-\sqrt{98}}{10}$$

$$-\frac{\sqrt{2}}{2}\left(\cos\alpha+\sin\alpha\right) = -\frac{\sqrt{2}}{2}\left(-\frac{\sqrt{98}}{10}+\frac{\sqrt{2}}{10}\right) = \frac{3}{5}$$