محمدحسین ایروانی

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

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

ربع اول ✓

(۲) $\frac{\cos\alpha}{\sin\alpha}=\frac{\cos\alpha}{\sqrt{\sin^2\alpha}}$

$|\sin\alpha|=\sin\alpha$

$\sin\alpha>0$

۲- (۲)

$$-\frac{\pi}{6}<2x<\frac{5\pi}{6}$$

$$-\frac{1}{2}<\frac{m-1}{4}\leq 1$$

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

$$-1<m\leq 5$$ ✓

ج- (۲) $\frac{2}{\sin 2x}=-6$

$$\frac{1}{\sin^3 2x+\cos^3 2x}=\frac{1}{(\sin 2x+\cos 2x)(\sin^2 2x-\sin 2x\cos 2x+\cos^2 2x)}$$

$$=\frac{1}{\left(\frac{-\sqrt{2}}{3}\right)\left(1-\frac{1}{2}\sin 2x\right)}=\frac{1}{\left(\frac{-\sqrt{2}}{3}\right)\left(\frac{3}{4}\right)}=\frac{-9}{3\sqrt{2}}=\frac{-3\sqrt{2}}{4}$$ ✓

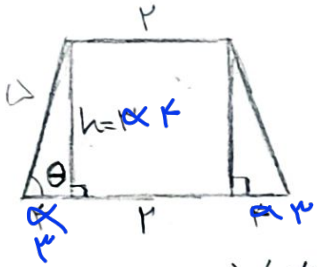
$(\sin 2x+\cos 2x)^2=\sin^2 2x+\cos^2 2x+\sin^2 2x=1-\frac{2}{9}=\frac{1}{9}$

$\sin 2x+\cos 2x=\frac{-\sqrt{2}}{3}$

۴- ۵

$\cos\theta=\frac{4}{10}$ دقت!

$\sin\theta=\frac{h}{5}=\frac{4}{10}\Rightarrow h=4$



$$S=\frac{(10+2)\times 3}{2}=18$$

$$\frac{(2+8)\times 4}{2}=20$$

۵- (۲) $(-\cot 15)(\tan 15)-(\sin 15)(-\sin 15)=-1+\sin^2 15=-\cos^2 15$

$\Rightarrow k=-1$ ✓

۶- (۲) $A=\sqrt{3}\left(-\frac{\sqrt{2}}{2}\right)(-\cos 27)-\sqrt{2}\left(\frac{\sqrt{3}}{2}\right)(-\cos 27)=\frac{\sqrt{6}}{2}\cos 27$

$\frac{\frac{\sqrt{6}}{2}\cos 27}{\cos 27}=\frac{\sqrt{6}}{2}$ ✓

۷- (۲) $f\left(\frac{\pi}{24}\right)=16\cos^2\left(\frac{\pi}{12}\right)\cos^2\left(\frac{\pi}{6}\right)\cos^2\left(\frac{\pi}{4}\right)\cos^2\left(\frac{\pi}{2}\right)$

$=8\left(\cos\left(\frac{\pi}{6}\right)+1\right)\left(\frac{2}{8}\right)\left(\frac{1}{4}\right)\left(\frac{1}{4}\right)=\frac{6+2\sqrt{2}}{16}$ ✓

$\frac{\sqrt{2}}{2}$ $\frac{2+\sqrt{2}}{8}$

۸- (۲) $\sin x=\frac{2\tan\frac{x}{2}}{1+\tan^2\frac{x}{2}}\Rightarrow -\frac{2}{5}-\frac{2}{5}\tan^2\frac{x}{2}=2\tan\frac{x}{2}$

$\frac{2}{5}\tan^2\frac{x}{2}+2\tan\frac{x}{2}+\frac{2}{5}=0$

$\tan\frac{x}{2}=\begin{cases}\frac{-2+\sqrt{4-\frac{4}{25}}}{\frac{4}{5}}=-\frac{1}{2}\\ \frac{-2-\sqrt{4-\frac{4}{25}}}{\frac{4}{5}}=-2\end{cases}$ ✓

$1-\sin x=4+4\sin x$

$5\sin x=-2\quad \sin x=-\frac{2}{5}$

$\pi\leq x\leq\frac{3\pi}{2}\quad\frac{\pi}{2}\leq\frac{x}{2}\leq\frac{3\pi}{4}\Rightarrow\tan\frac{x}{2}=-\frac{1}{2}$

۹- (۲) $\frac{4\sin\frac{\theta}{2}\cos\frac{\theta}{2}}{4\sin^2\frac{\theta}{2}}+\frac{4\cos^2\frac{\theta}{2}}{4\sin\frac{\theta}{2}\cos\frac{\theta}{2}}=2\cot\frac{\theta}{2}\Rightarrow k=2$ ✓

$$\cos\left(\frac{17\pi}{4}+\alpha\right)=\cos\frac{16\pi}{4}\cos\alpha-\sin\frac{2\pi}{4}\sin\alpha=\left(\frac{-\sqrt{2}}{2}\right)\left(\frac{-7\sqrt{2}}{10}\right)-\left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}}{10}\right)$$

(۲) ۱۰

$$=\frac{7}{10}-\frac{1}{10}=0,6$$

$$\cos^2\alpha+\sin^2\alpha=1$$

$$\cos^2\alpha=\frac{98}{100}$$

$$\cos\alpha=\frac{-7\sqrt{2}}{10}$$