نام: فاطمه سنجری کلاس = ۱۰ ریاضی فیزیک A تکلیف = ۲۸

(۱۹)

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

if $\cos\alpha>0$: $\frac{1-\sin\alpha}{\cos\alpha}=\frac{1-\sin\alpha}{\cos\alpha}$ ✓ قبول $\Rightarrow \cos\alpha>0$ ①

if $\cos\alpha<0$: $\frac{-1-\sin\alpha}{\cos\alpha}=\frac{\sin\alpha-1}{\cos\alpha}$ ✗ غیرقابل قبول

$$\cot\alpha=\frac{\cos\alpha}{|\sin\alpha|}\xrightarrow{\cos\alpha>0}\sin\alpha>0 \quad ②$$

①، ② ⇒ α در ناحیه اول است

$$-\frac{\pi}{12}<x<\frac{5\pi}{12}\Rightarrow -\frac{\pi}{6}<2x<\frac{5\pi}{6}\Rightarrow 0\le\sin 2x\le 1$$

$$0\le\frac{m-1}{3}\le 1\Rightarrow 0\le m-1\le 3\Rightarrow \boxed{1\le m\le 4}$$

جواب ← *

(۲)

$$\tan x+\cot x=-2\Rightarrow\frac{1}{\sin x\cos x}=-2\Rightarrow -\frac{1}{2}=\sin x\cos x$$

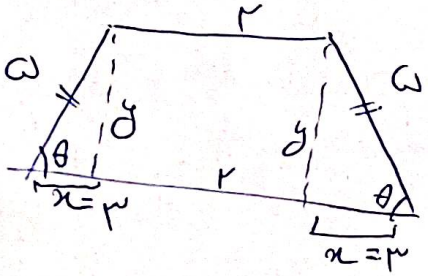
$$(\sin x+\cos x)^2=\underbrace{\sin^2 x+\cos^2 x}_{1}+\underbrace{2\sin x\cos x}_{2\times(-\frac{1}{2})}$$

$$\Rightarrow \boxed{\frac{1}{2}=\sin x+\cos x}\quad \frac{3\pi}{4}<x<\pi \rightarrow \boxed{-\frac{\sqrt{2}}{2}=\sin x+\cos x}$$

(۳)

$$\frac{1}{\sin^3 x+\cos^3 x}=\frac{1}{(\sin x+\cos x)(\sin^2 x+\cos^2 x-\sin x\cos x)}=\frac{1}{-\frac{\sqrt{2}}{2}\times(1+\frac{1}{2})}=\boxed{\frac{9}{4\sqrt{2}}}$$

جواب ← *



$$\cos\theta=\frac{6}{10}=\frac{x}{5}\Rightarrow \boxed{x=3}$$

فیثاغورث $\Rightarrow 3^2+y^2=5^2\Rightarrow \boxed{y=4}$ ارتفاع

$$\text{ذوزنقه}=\frac{4\times(1+2)}{2}=6$$

جواب ← *

(۴)

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$\tan(\frac{3\pi}{2}+\alpha)\times(-\tan(\pi-\alpha))-\sin(4\pi+\alpha)\cos(\frac{3\pi}{2}-\alpha)=$

$-\cot\alpha\times(\tan\alpha)-\sin\alpha(-\sin\alpha)=-1+\sin^2\alpha=-(1-\sin^2\alpha)=$

$-\cos^2\alpha \rightarrow \boxed{K=-1}$ ✓

6

$\cos(\alpha)=\cos(\pi+30^\circ)=-\cos 30^\circ=-\frac{\sqrt{3}}{2}$

$\sin(135^\circ)=\sin(\pi-45^\circ)=\sin(45^\circ)=\frac{\sqrt{2}}{2}$

$\sqrt{3}\times(-\frac{\sqrt{3}}{2})\sin^2 45-\sqrt{2}\times(\frac{\sqrt{2}}{2})\cos\alpha\cos 135=$

$-\frac{1}{2}\sin(2\times 45)-\frac{1}{2}\cos\alpha\cos 135=$

$-\frac{1}{2}(\sin^2 45+\cos\alpha\cos 135)=-\frac{1}{2}(\sin(\frac{3\pi}{2}-\alpha)+\cos(\pi-\alpha))=\boxed{\cos\alpha}$

پس عبارت $\frac{1}{\cos\alpha}$ برابر $\sec\alpha$ است.

7

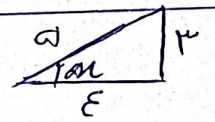
$14\cos^2(\frac{\pi}{12})\cos^2(\frac{\pi}{6})\cos^2(\frac{\pi}{3})\cos^2(\frac{5\pi}{12})=14(\frac{1+\cos\frac{\pi}{6}}{2})(\frac{1}{2})(\frac{3}{4})=(\frac{3}{4})(\frac{1}{2})(\frac{3}{4})14$

$14(\frac{1}{14})(\frac{3}{4})(\frac{4+\sqrt{3}}{4})=\boxed{\frac{6+3\sqrt{3}}{16}}$

جواب ✓

8

$3+3\sin x=1-\sin x \Rightarrow \sin x=-\frac{2}{4}$



$\Rightarrow \tan x=\frac{3}{4}$

$\tan x=\frac{2\tan\frac{x}{2}}{1-\tan^2\frac{x}{2}}=\frac{3}{4}\Rightarrow 3-3\tan^2\frac{x}{2}=8\tan\frac{x}{2}$ $\xrightarrow{\tan\frac{x}{2}=t}$ $3t^2+8t-3=0$

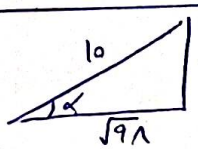
$\rightarrow \Delta=100\Rightarrow$ $t_1=\frac{1}{3}$, $t_2=\boxed{-3=\tan\frac{x}{2}}$ ✓ مورد قبول

9

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

$2\times\frac{1}{\tan\frac{\theta}{2}}=2\cot\frac{\theta}{2}\Rightarrow\boxed{K=2}$

10



$\sqrt{3}\Rightarrow\cos\alpha=-\frac{\sqrt{91}}{10}$

$\sin(\frac{11\pi}{4})=\sin(3\pi-\frac{\pi}{4})=\boxed{\sin\frac{\pi}{4}}$ $\cos\frac{11\pi}{4}=\boxed{-\cos\frac{\pi}{4}}$

$\cos(\frac{11\pi}{4}+\alpha)=\cos\frac{11\pi}{4}\cos\alpha-\sin\frac{11\pi}{4}\sin\alpha=-\frac{\sqrt{2}}{2}\times(-\frac{\sqrt{91}}{10})-\frac{\sqrt{2}}{2}\times(\frac{\sqrt{3}}{10})=$

$\frac{\sqrt{182}}{20}-\frac{2}{20}=\frac{12}{20}=\boxed{\frac{3}{5}}$

۴) $A = \sqrt{۳}\,y - \frac{\sqrt{۳}}{۲}\,y \sin(۲۷۰ - ۲v) - \sqrt{۲}\,v \frac{\sqrt{۲}}{۲} \cos(۱۸۰ - ۲v)$

$\rightarrow \frac{۵}{۲}\cos(۲v) \longrightarrow$ برابر $\frac{۵}{۲}$