۱۹,۵

نام و نام خانوادگی: فراز شیرازی ...... پاسخنامه تشریحی تکلیف شماره ۲۸ کلاس یازدهم ریاضی ......

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

(۲)

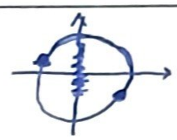
$$\frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}}=\frac{\cos\alpha}{|\sin\alpha|}=\frac{\cos\alpha}{\sin\alpha}\longrightarrow\sin\alpha=|\sin\alpha|\Rightarrow\sin\alpha>0$$

$1-\cos^2\alpha \to \sin^2\alpha$

$\longrightarrow$ α در ربع اول قرار دارد

۲

$$-\frac{\pi}{12}<x<\frac{5\pi}{12}\longrightarrow-\frac{\pi}{6}<2x<\frac{5\pi}{6}$$



(۲)

$$-\frac{1}{2}\leqslant\sin 2x\leqslant1\longrightarrow-\frac{1}{2}<\frac{m-1}{4}\leqslant1\longrightarrow-2<m-1\leqslant4\longrightarrow-1<m\leqslant5$$

$$\longrightarrow m\in(-1,5]$$

۳

$$\tan x+\cot x=-3\to\frac{2}{\sin 2x}=-3\to\sin 2x=\frac{2}{-3}\to 2\sin x\cos x=-\frac{2}{3}$$

(۲)

$$\longrightarrow(\sin x+\cos x)^2=\underbrace{\sin^2+\cos^2}_{1}+\underbrace{2\sin x\cos x}_{-\frac{2}{3}}\longrightarrow\sin x+\cos x=-\frac{1}{\sqrt3}$$

$$\frac{1}{(\sin^3x+\cos^3x)}=\frac{1}{\underbrace{(\sin x+\cos x)}_{-\frac{1}{\sqrt3}}(\underbrace{\sin^2x+\cos^2x}_{1}-\underbrace{\sin x\cos x}_{-\frac{1}{3}})}=\frac{1}{\frac{1}{\sqrt3}\times\frac{4}{3}}=-\frac{3\sqrt3}{4}$$

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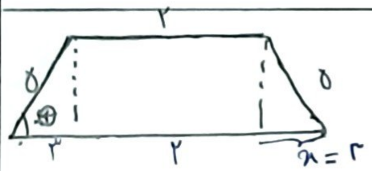

$$\cos\theta=0.6=\frac{x}{\underset{5}{\text{وتر (ساق)}}}\to x=3\longrightarrow$$ ارتفاع = ۴

(۲)

$$S=\frac{(8+2)\times4}{2}=20$$

۵

$$\tan(285^\circ)\cdot\tan(\underbrace{-165^\circ}_{195^\circ})-\sin(1095)\cos(255)$$

(۲)

$$\longrightarrow\left(\underbrace{\tan(270^\circ+15)}_{-\cot15^\circ}\times\underbrace{\tan(180^\circ+15^\circ)}_{\tan15^\circ}\right)-\left(\underbrace{\sin(1080+15)}_{\sin15}\times\underbrace{\cos(270-15)}_{-\sin15}\right)$$

$$=-1+\sin^2 15^\circ=-\cos^2 15^\circ\longrightarrow K=-1$$

$A=\sqrt{3}\cos(210^\circ)\sin(243^\circ)-\sqrt{2}\sin(135^\circ)\cos(153^\circ)$, $\cos(210^\circ)=-\frac{\sqrt3}{2}$, $\sin(135^\circ)=\frac{\sqrt2}{2}$ $A=-\frac{3}{2}\underbrace{\sin(270^\circ-27^\circ)}_{-\cos27^\circ}-1\times\underbrace{\cos(180^\circ-27^\circ)}_{-\cos27^\circ}=\frac{3}{2}\cos27^\circ+\cos27^\circ$ $=2.5\cos27^\circ\longrightarrow$ ۲٫۵ برابر	۶	۲
$16\cos^2(3x)\cos^2(6x)\cos^2(12x)\cos^2(24x)=?$ $\quad \sin^2 15=\frac{1-\frac{\sqrt3}{2}}{2}=\frac{2-\sqrt3}{4}$ $\times\sin^2(3x)\longrightarrow 4\sin^2(6x)\cos^2(6x)\cos^2(12x)\cos^2(24x)=$ $=\sin^2(12x)\cos^2(12x)\cos^2(24x)=\frac14\sin^2(24x)\cos^2(24x)=\frac1{16}\sin^2(48x)$ $\div\sin^2 3x\quad \frac1{16}\times\frac{\cancel{\cos^2}\,\sin^2(48x)}{\sin^2(3x)}\xrightarrow{x=\frac{\pi}{36}}\frac1{16}\times\frac{\sin^2(240^\circ)}{\sin^2(15^\circ)}=\frac1{16}\frac{\cos^2 30^\circ}{\sin^2 15^\circ}$ $\to\sin15^\circ=\frac{\cancel{\sqrt6-\sqrt2}}{4}\longrightarrow\frac1{16}\times\frac{\frac34}{\frac{(\sqrt6-\sqrt2)^2}{16}}=\frac{(\sqrt6-\sqrt2)^2\times3}{4}=\frac{(6+2-2\sqrt{12})\times3}{4}=\frac{(8-4\sqrt3)\times3}{4}=\cancel{6-3\sqrt3}$	۷	۱٫۵
$\frac{1-\sin x}{1+\sin x}=4\to\frac{(\sin\frac x2-\cos\frac x2)^2}{(\sin\frac x2+\cos\frac x2)^2}=4\to\left\lvert\frac{\sin\frac x2-\cos\frac x2}{\sin\frac x2+\cos\frac x2}\right\rvert=2$ $180^\circ<x<270^\circ\to 90^\circ<\frac x2<135^\circ\longrightarrow\sin\frac x2-\cos\frac x2>0$ و $\sin\frac x2+\cos\frac x2>0$ $\frac{\sin\frac x2-\cos\frac x2}{\sin\frac x2+\cos\frac x2}=2\to\sin\frac x2-\cos\frac x2=2\sin\frac x2+2\cos\frac x2\to\sin\frac x2=-3\cos\frac x2\to\tan\frac x2=-3$	۸	۲
$\frac{\sin\theta}{1-\cos\theta}=\frac{1+\cos\theta}{\sin\theta}=\cot\frac{\theta}{2}$ $\to\frac{\sin\theta}{1-\cos\theta}+\frac{1+\cos\theta}{\sin\theta}=2\cot\frac\theta2\longrightarrow\boxed{k=2}$	۹	۲
$\cos\left(\frac{11\pi}{4}+\alpha\right)=\cos\left(\alpha+\frac{3\pi}{4}\right)$ $\quad\sin\alpha=\frac{\sqrt2}{10}\to\cos\alpha=\frac{\sqrt{98}}{10}$ $\to\cos\alpha\cos\frac{3\pi}{4}-\sin\alpha\sin\frac{3\pi}{4}=\frac{\sqrt{98}}{10}\left(-\frac{\sqrt2}{2}\right)-\frac{\sqrt2}{2}\times\frac{\sqrt2}{10}$ $=\frac{-\sqrt2\sqrt{98}-\sqrt2\sqrt2}{20}=\frac{\pm\sqrt{196}-2}{20}\quad\frac{+14-2}{20}=+0.6$	۱۰	۲

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$$f\left(\frac{\pi}{۳۶}\right) = ۱۶\cos^۲\left(\frac{\pi}{۱۲}\right)\cos^۲\left(\frac{\pi}{۶}\right)\cos^۲\left(\frac{\pi}{۳}\right)\cos^۲\left(\frac{۲\pi}{۳}\right)$$

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

$$f\left(\frac{\pi}{۳۶}\right) = ۱۶\left(\frac{۲+\sqrt{۳}}{۴}\right) \times \frac{۳}{۴} \times \frac{۱}{۴} \times \frac{۱}{۴} = \boxed{\frac{۳(۲+\sqrt{۳})}{۱۶}}$$