نام و نام خانوادگی ......صبا ابراهیم...... پاسخنامه تشریحی تکلیف شماره ..۲۸.. کلاس ..یازدهم..................

۱

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

۱ یا ۲ ها

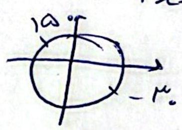
$$\frac{1}{|\cos\alpha|}-\tan\alpha=\frac{1}{|\cos\alpha|}-\frac{\sin\alpha}{\cos\alpha}=\frac{1-\sin\alpha}{|\cos\alpha|}\longrightarrow \cos\alpha>0$$

ناحیه ۱ یا ۴

α در ناحیه اول قرار دارد

۲

$$-\frac{\pi}{12}<x<\frac{5\pi}{12}\xrightarrow{\times 2}-\frac{\pi}{6}<2x<\frac{5\pi}{6}\qquad 2x=\alpha\to$$



$$\sin\alpha=\frac{m-1}{4}\ ,\ -\frac{\pi}{6}<\alpha<\frac{5\pi}{6}$$

$$\longrightarrow -\frac{1}{2}<\sin\alpha\le 1\to -\frac{1}{2}<\frac{m-1}{4}\le 1\xrightarrow{\times 4}-2<m-1\le 4$$

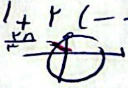
$$\xrightarrow{+1}-1<5\le 5\qquad \boxed{m\in(-1,5]}$$

۳

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

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

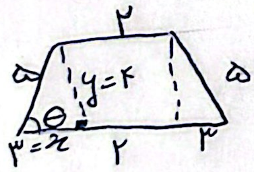
$$(\sin x+\cos x)^2=\frac{1}{3}\longrightarrow \sin^2x+\cos^2x+2\sin x\cos x=1+2\left(-\frac{1}{3}\right)=\frac{1}{3}\to \sin x+\cos x=\pm\frac{1}{\sqrt{3}}$$



مقدار منفی کسینوس از سینوس بیشتر است.

$$\frac{1}{\left(\frac{4}{3}\right)(\sin x+\cos x)}=\frac{1}{\frac{4}{3}\times-\frac{1}{\sqrt{3}}}=\boxed{\frac{-3\sqrt{3}}{4}}$$

۴



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

$$\cos\theta=\frac{6}{10}\to\sin\theta=\sqrt{1-\frac{36}{100}}=\frac{8}{10}=\frac{y}{5}$$

$$y=4$$

$$S=\frac{(2+8)\times\cancel{4}^{\,2}}{\cancel{2}}=\boxed{20}$$

۵

$$\tan(285)\underbrace{\tan(-165)}_{-\tan165}-\underbrace{\sin(105)}_{-\sin15}\cos255=\tan(270^\circ+15^\circ)(-\tan(180^\circ-15^\circ))$$

$$-(\sin15^\circ)\cos(270^\circ-15^\circ)=(-\cot15^\circ)(\tan15^\circ)-(\sin15^\circ)(-\sin(15^\circ))$$

$$=-1+\sin^2 15^\circ=-\cos^2(15^\circ)\longrightarrow \boxed{K=-1}$$

$$A=\sqrt{3}\,\mathrm{Cos}(180^\circ+30^\circ)\,\sin(270^\circ-27^\circ)-\sqrt{2}\sin(90^\circ+45^\circ)\,\mathrm{Cos}(180^\circ-27^\circ)=$$
$$\sqrt{3}\,(-\cos 30^\circ)(-\mathrm{Cos}\,27^\circ)-\sqrt{2}\,(\sin 45^\circ)(-\mathrm{Cos}\,27^\circ)=$$
$$\sqrt{3}\left(\frac{\sqrt{3}}{2}\right)\cos(27^\circ)+\sqrt{2}\left(\frac{\sqrt{2}}{2}\right)(\mathrm{Cos}\,27^\circ)=\frac{5}{2}(\mathrm{Cos}\,27^\circ)$$
$$\frac{\frac{5}{2}(\mathrm{Cos}\,27^\circ)}{\mathrm{Cos}\,27^\circ}=\boxed{2/5}$$ ۶

$$f(x)=16\,\frac{(\underbrace{\underbrace{\underbrace{\underbrace{\sin 3x\,\mathrm{Cos}\,3x}_{\frac{1}{2}\sin 6x}\,\mathrm{Cos}\,6x}_{\frac{1}{4}\sin 12x}\,\mathrm{Cos}\,12x}_{\frac{1}{8}\sin 24x}\,\mathrm{Cos}\,24x}_{\frac{1}{16}\sin 48x})^2}{\sin^2 3x}=\frac{\frac{1}{16}\sin^2 48x}{\sin^2 3x}=$$
$$\frac{1}{16}\,\frac{\sin^2\frac{4\pi}{3}}{\sin^2\frac{\pi}{12}}=\frac{1}{16}\,\frac{\left(\frac{\sqrt{3}}{2}\right)^2}{\frac{2-\sqrt{3}}{4}}=\frac{3}{16}(2+\sqrt{3})=\boxed{\frac{6+3\sqrt{3}}{16}}$$ ۷
$$\sin^2\frac{\pi}{12}=\frac{1-\cos\frac{\pi}{6}}{2}=\frac{1-\frac{\sqrt{3}}{2}}{2}=\frac{2-\sqrt{3}}{4}$$

$$\frac{1-\sin x}{1+\sin x}=4\longrightarrow 4+4\sin x=1-\sin x\longrightarrow 5\sin x=-3\longrightarrow \sin x=-\frac{3}{5}$$
$$\mathrm{Cos}^2=1-\sin^2 x=1-\frac{9}{25}=\frac{16}{25}\longrightarrow \cos x=\pm\frac{4}{5}$$ x در ناحیه سوم
$$\frac{1-\mathrm{Cos}\,x}{1+\cos x}=\frac{2\sin^2(\frac{x}{2})}{2\cos^2(\frac{x}{2})}=\tan^2\left(\frac{x}{2}\right)\longrightarrow \tan^2\left(\frac{x}{2}\right)=\frac{1-(-\frac{4}{5})}{1+(-\frac{4}{5})}$$ ۸
$$\rightarrow \tan^2\left(\frac{x}{2}\right)=\frac{\frac{9}{5}}{\frac{1}{5}}=9\longrightarrow \tan\left(\frac{x}{2}\right)=\boxed{\pm 3=-3}$$
$$\pi<x<\frac{3\pi}{2}\qquad \frac{\pi}{2}<\frac{x}{2}<\frac{3\pi}{4}$$
tan<0 در ناحیه دوم

$$\frac{\sin\theta}{1-\mathrm{Cos}\,\theta}+\frac{1+\mathrm{Cos}\,\theta}{\sin\theta}=\frac{\sin^2\theta+1-\mathrm{Cos}^2\theta}{(1-\mathrm{Cos}\,\theta)\sin\theta}=\frac{2\cancel{\sin^2\theta}}{(1-\mathrm{Cos}\,\theta)(\cancel{\sin\theta})}=\frac{2\sin\theta}{1-\cos\theta}$$
$$=\frac{2\times 2\sin\frac{\theta}{2}\cos\frac{\theta}{2}}{2\sin^2\frac{\theta}{2}}=2\,\mathrm{Cot}\,\frac{\theta}{2}\longrightarrow \boxed{k=2}$$ ۹

$$\begin{cases}\mathrm{Cos}\,\alpha=-\frac{7\sqrt{2}}{10}\\ \sin\alpha=\frac{\sqrt{2}}{10}\end{cases}$$
$$\mathrm{Cos}\left(\frac{11\pi}{4}+\alpha\right)=\underbrace{\mathrm{Cos}\,\frac{11\pi}{4}}_{-\mathrm{Cos}\frac{3\pi}{4}}\,\mathrm{Cos}\,\alpha-\underbrace{\sin\frac{11\pi}{4}}_{\sin\frac{3\pi}{4}}\,\sin\alpha=$$
$$\left(-\frac{\sqrt{2}}{2}\right)\left(-\frac{7\sqrt{2}}{10}\right)-\left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}}{10}\right)=\frac{7}{10}-\frac{1}{10}=\frac{6}{10}=\boxed{\frac{3}{5}}$$ ۱۰