نام و نام خانوادگی ....[illegible].......... پاسخنامه تشریحی تکلیف شماره .۱۵.. کلاس .[illegible]......

۱	
۲	$x^2-(\sin\alpha)x-\frac{1}{4}\cos^2\alpha=0 \xrightarrow{x=\frac{2}{3}} \frac{4}{9}-\frac{2}{3}\sin\alpha-\frac{1}{4}\cos^2\alpha=0 \xrightarrow{\cos^2\alpha=1-\sin^2\alpha}$ $\frac{4}{9}-\frac{2}{3}\sin\alpha-\frac{1}{4}(1-\sin^2\alpha)=0 \xrightarrow{\times 36} 9\sin^2\alpha-24\sin\alpha+7=0 \longrightarrow \sin\alpha=\frac{7}{3}\ \times$ $\longrightarrow \sin\alpha=\frac{1}{3} \longrightarrow \cos\alpha=\frac{\sqrt{8}}{3}$ $\tan\alpha=\frac{\frac{1}{3}}{\frac{\sqrt{8}}{3}}=\frac{1}{\sqrt{8}} \longrightarrow 1+\tan^2\alpha=1+\frac{1}{8}=\frac{9}{8}$
۳	$\log^{(\sin\alpha)}-\log^{(-\cos\alpha)}=\log^{3} \longrightarrow \log^{\frac{\sin\alpha}{-\cos\alpha}}=\log^{-\tan\alpha}=\log^{3} \longrightarrow \tan\alpha=-3$ $\sin2\alpha=\frac{2\tan\alpha}{1+\tan^2\alpha}=\frac{-6}{10}=-0/6 \quad \sqrt{(\sin\alpha-\cos\alpha)^2}=\sqrt{\sin^2\alpha+\cos^2\alpha-\sin2\alpha}=\sqrt{1-(-0/6)}=\sqrt{1/6}$ $=\frac{4}{\sqrt{10}}\times\frac{\sqrt{10}}{\sqrt{10}}=\boxed{0/4\sqrt{10}}$
۴	
۵	$\frac{3\sin x+\sin x\cos x}{2-2\cos^2x}<0 \longrightarrow \frac{\sin x\,(\overset{\text{همواره }(+)}{3+\cos x})}{2\underbrace{(1-\cos^2x)}_{\sin^2x}}<0 \rightsquigarrow \boxed{\sin x<0}$ $\sin x\tan x-\frac{1}{\cos x}>0 \longrightarrow \frac{\sin^2x-1}{\cos x}>0 \longrightarrow \frac{-\cos^2x}{\cos x}>0 \rightsquigarrow \boxed{\cos x<0}$ ناحیه سوم

$\frac{2}{\sin x}+\frac{3}{\cos x}=0 \longrightarrow \frac{2}{\sin x}=\frac{-3}{\cos x} \longrightarrow 2\cos x=-3\sin x \xrightarrow{\div \cos x} 2=-3\tan x$ $\tan x=\frac{-2}{3} \longrightarrow \cot x=\frac{-3}{2}$ $\tan x+\cot x=\frac{-2}{3}-\frac{3}{2}=\frac{-4-9}{6}=\frac{-13}{6}$	۶
$1+\sin\alpha=(\sin\frac{\alpha}{2}+\cos\frac{\alpha}{2})^2$ $\quad \sqrt{\sin 50^\circ+1}=\sin 25+\cos 25=\sqrt{2}\sin 70=\sqrt{2}\cos 20$ $\sin 50^\circ+\sin 10^\circ=\cancel{2}\cancel{\sin 30}\cos 20^\circ=\cos 20$ $\frac{\sqrt{1+\sin 50}}{\sin 50^\circ+\sin 10}=\frac{\sqrt{2}\cancel{\cos 20}}{\cancel{\cos 20}}=\sqrt{2}$	۷
$\underbrace{(1-2\sin^2 5^\circ)}_{\cos 10^\circ}\underbrace{(2\cos^2 10-1)}_{\cos 20}\underbrace{\left(\frac{1-\tan^2 20}{1+\tan^2 20}\right)}_{\cos 40^\circ}=\cos 10\cdot\cos 20\cdot\cos 40$ $\xrightarrow{\times\frac{\sin 10}{\sin 10}} \frac{\sin 10\cos 10\cos 20\cos 40}{\sin 10}=\frac{\sin 80}{\sin 10}=\frac{\cos 10}{\sin 10}=\tan 10^\circ$	۸
$\sin\alpha+3\cos\alpha=2 \longrightarrow \sin\alpha=2-\cos\alpha$ $\quad (\sin\alpha+3\cos\alpha)^2=\sin^2\alpha+6\sin\alpha\cos\alpha+9\cos^2\alpha=4$ $(1-\cos^2\alpha)+9\cos^2\alpha+6(2-3\cos\alpha)\cos\alpha=4$ $\Rightarrow -10\cos^2\alpha+12\cos\alpha=3$ $5\cos 2\alpha-12\cos\alpha=5(2\cos^2\alpha-1)-12\cos\alpha=\underbrace{10\cos^2\alpha-12\cos\alpha}_{-3}-5=-8$	۹
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