نام و نام خانوادگی کوروش شیرازی فر پاسخنامه تشریحی تکلیف شماره ۱۵ کلاس دوازدهم تجربی A

$y=\tan(-2x+\frac{\pi}{4})$ $\quad B\,\vert\,y^{0} \to \tan(\frac{\pi}{4})=1 \Rightarrow \boxed{y=1}$ $T=\frac{\pi}{\vert -2\vert}=\frac{\pi}{2} \Rightarrow AC=\frac{\pi}{2} \Rightarrow S=\frac{\frac{\pi}{2}\times 1}{2}=\boxed{\frac{\pi}{4}}$	1
$x^2-(\sin\alpha)x-\frac{1}{4}\cos^2\alpha=0 \xrightarrow{\cos^2\alpha=(1-\sin^2\alpha)} x^2-(\sin\alpha)x-\frac{1}{4}(1-\sin^2\alpha)$ $x=\frac{2}{3} \Rightarrow \frac{4}{9}-\frac{2}{3}\sin\alpha-\frac{1}{4}+\frac{1}{4}\sin^2\alpha=0 \Rightarrow \frac{1}{4}\sin^2\alpha-\frac{2}{3}\sin\alpha+\frac{7}{36}=0$ $\xrightarrow{\times 36} 9\sin^2\alpha-24\sin\alpha+7=0 \Rightarrow \sin^2\alpha-24\sin\alpha+63=0 \Rightarrow \begin{cases}\sin\alpha=\frac{7}{3} \times \\ \sin\alpha=\frac{1}{3} \checkmark\end{cases}$ $\Rightarrow \cos\alpha=\frac{\sqrt{8}}{3}$ و $1+\tan^2\alpha=\frac{1}{\cos^2\alpha} \xrightarrow{\cos\alpha=\frac{\sqrt{8}}{3}} =\frac{1}{\frac{8}{9}}=\boxed{\frac{9}{8}}$	2
$\lg^{(\sin\alpha)}-\lg^{(-\cos\alpha)}=\lg^{3} \Rightarrow \lg^{\frac{\sin\alpha}{-\cos\alpha}}=\lg^{3}$ $\Rightarrow \frac{\sin\alpha}{-\cos\alpha}=3 \Rightarrow \sin\alpha=-3\cos\alpha \Rightarrow \sin\alpha-\cos\alpha$ $=-3\cos\alpha-\cos\alpha=-4\cos\alpha$	3
$\sin^2\theta=x$ و $\cos^2\theta=y \Rightarrow x+y=1$ $x^2+y=\frac{4}{5}$ و $y^2+x=(1-x)^2+x=1-2x+x^2+x=1-x+x^2$ $=x^2+y=\frac{4}{5} \Rightarrow \cos^4\theta+\sin^2\theta=\frac{4}{5}$	4
$\sin x\cdot\tan x>\frac{1}{\cos x} \Rightarrow \frac{\sin^2 x}{\cos x}>\frac{1}{\cos x} \xrightarrow{\sin^2 x\leq 1}$ 1 $\Rightarrow \cos x<0$ $\qquad \cos^2 x\leq 1 \Rightarrow 2-2\cos^2 x\geq 0$ $\frac{\sin x(3+\cos x)}{2-2\cos^2 x}<0$ $\qquad \Rightarrow \sin x(3+\cos x)<0 \xrightarrow{3+\cos x>0}$ 2 $\Rightarrow \sin x<0 \to 1\cap 2 \to$ ناحیه ۳	5

$$\frac{2}{\sin x}+\frac{3}{\cos x}=0 \Rightarrow \frac{2\cos x+3\sin x}{\sin x\cdot\cos x}=0 \Rightarrow 2\cos x=-3\sin x$$

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

$$\Rightarrow \tan x+\cot x=-\frac{2}{3}-\frac{3}{2}=\frac{-4-9}{6}=\boxed{\frac{-13}{6}}$$

۷

$$\sqrt{1+\sin 50}=\sqrt{1+\cos 40}=\sqrt{2\cos^2 20}=\sqrt{2}\cos 20$$

$$\sin 50+\sin 10 \xrightarrow[\text{جمع به ضرب}]{\text{فرمول}} 2\sin\left(\frac{50+10}{2}\right)\cdot\cos\left(\frac{50-10}{2}\right)$$

$$=2\sin(30)\cdot\cos 20 \Rightarrow \frac{\sqrt{1+\sin 50^\circ}}{\sin 50^\circ+\sin 10^\circ}=\frac{\sqrt{2}\cancel{\cos 20}}{2\sin(30)\cancel{\cos 20}}$$

$$\boxed{=\sqrt{2}}$$

۸

$$(1-2\sin^2 5)=\cos 10 \;/\; 2\cos^2 10-1=\cos 20$$

$$\frac{1-\tan^2 20}{1+\tan^2 20}=\cos 40$$

$$\text{عبارت}=\cos 10\times\cos 20\times\cos 40 \xrightarrow[\div\sin 10]{\times\sin 10}=\frac{\frac{1}{2}\sin 20\times\cos 20\times\cos 40}{\sin 10}$$

$$=\frac{\frac{1}{4}\times\sin 40\times\cos 40}{\sin 10}=\frac{1}{8}\frac{\sin 80}{\sin 10}=\frac{1}{8}\times\frac{\cos 10}{\sin 10}=\boxed{\frac{1}{8}\cot 10}$$

۹

$$\sin\alpha+3\cos\alpha=2 \Rightarrow \sin\alpha=2-3\cos\alpha \xrightarrow{\sin^2\alpha+\cos^2\alpha=1}$$

$$(2-3\cos\alpha)^2+\cos^2\alpha=1 \Rightarrow 10\cos^2 x-12\cos x+3=0$$

$$5\cos 2\alpha-12\cos\alpha \xrightarrow{\cos 2\alpha=2\cos^2\alpha-1} 5(2\cos^2\alpha-1)-12\cos\alpha$$

$$=10\cos^2\alpha-5-12\cos\alpha=\underbrace{10\cos^2\alpha-12\cos\alpha}_{-3}-5=\boxed{-8}$$

۱۰

$$A+B+C=180^\circ \qquad \cos^2\frac{A}{2}=\frac{1+\cos A}{2}$$

$$\xrightarrow{\text{فرمول ضرب به جمع}} \sin B\cdot\sin C=\frac{1}{2}(\cos(B-C)+\cos A)=\frac{1+\cos A}{2}$$

$$\cos(B-C)+\cos A=1+\cos A \Rightarrow \cos(B-C)=1$$

$$\Rightarrow B-C=0 \Rightarrow B=C=72^\circ \Rightarrow A=180-144=\boxed{36^\circ}$$