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نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۱۰۲ ... کلاس .....

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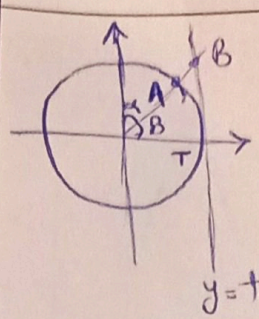

$\alpha+\beta=90^\circ$

$\tan\beta=\cot\alpha=BT$

$OBT \rightarrow$ رابطه فیثاغورس $\Rightarrow OB^2=1+\cot^2\alpha=\frac{1}{\sin^2\alpha}$ (۲)

$\Rightarrow OB=\left|\frac{1}{\sin\alpha}\right|=\frac{1}{\sin\alpha}$ ($\sin\alpha>0$) $\Rightarrow AB=\frac{1}{\sin\alpha}-1=\frac{1-\sin\alpha}{\sin\alpha}$

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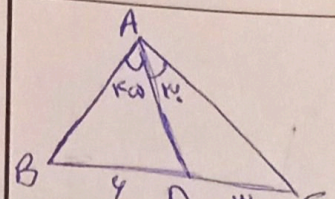

$\frac{S_{ABD}}{S_{ADC}}=\frac{\frac{1}{2}\times BD\times \text{ارتفاع}}{\frac{1}{2}\times CD\times \text{ارتفاع}}=\frac{BD}{CD}=2$ (۲)

$\frac{\sqrt{2}}{2}$

$\frac{S_{ABD}}{S_{ADC}}=2=\frac{\frac{1}{2}\times AB\times AD\times \sin 4\omega}{\frac{1}{2}\times AC\times AD\times \sin 3\omega}\Rightarrow 2=\frac{AB}{AC}\times\sqrt{2}\Rightarrow \frac{AB}{AC}=\sqrt{2}$

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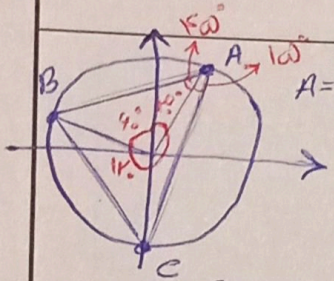


$A=90^\circ$

$A_1=\frac{180-90}{2}=45^\circ$

$A_2=\frac{180-120}{2}=15^\circ$

(الف) $S=\frac{1}{2}AB\times AC\times\sin 90^\circ=\frac{1}{2}\times\sqrt{2}\times\sqrt{2+\sqrt{3}}\times\frac{\sqrt{3}}{2}$

$\frac{\sqrt{12+4\sqrt{3}}}{4}=\frac{12+\sqrt{3}}{4}=\frac{3+\sqrt{3}}{4}$ (۲)

$AB=\sqrt{1+1}=\sqrt{2}$ ، $BC=\sqrt{1+1-2\times1\times(-\frac{1}{2})}=\sqrt{3}$

$AC=\sqrt{1+1-2\times1\times(\frac{-\sqrt{2}}{2})}=\sqrt{2+\sqrt{3}}$

(ب) محیط: $\sqrt{2}+\sqrt{3}+\sqrt{2+\sqrt{3}}$

۴

$S_{ABC}=\frac{1}{2}\times AB\times AC\times\sin 30^\circ=\frac{1}{2}\times\log_2^{3^3}\times\log_3^{2^4}\times\frac{1}{2}=$ (۲)

$\frac{1}{4}\times 4\times 3\times\log_2^3\times\log_3^2=3$

۵

$2m^2-m^2-\sin^2\alpha(2\sin^2\alpha-1)$ $\quad m-\cos m=0\Rightarrow m=\cos m$

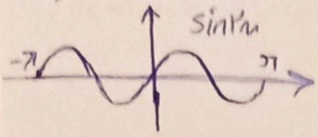
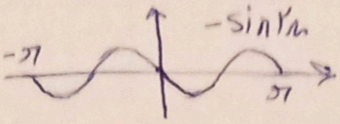
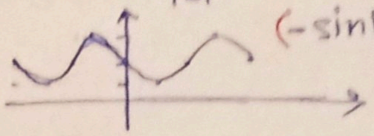
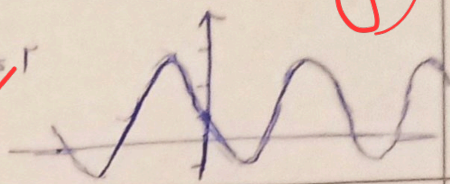
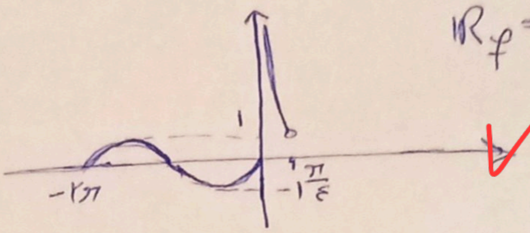
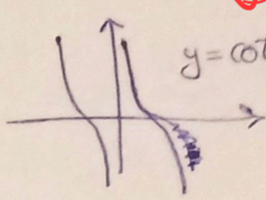
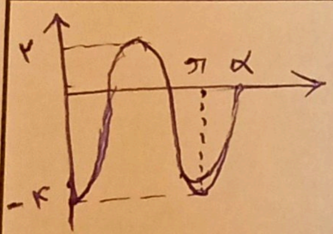
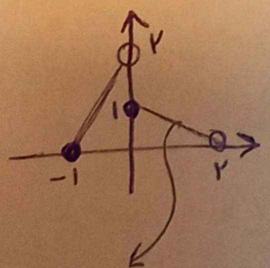
$2\cos^2\alpha-\cos^2\alpha-\sin^2\alpha(2\sin^2\alpha-1)$

$\cos^2\alpha-\sin^2\alpha=\cos 2\alpha$ ↔ $1-2\sin^2\alpha=\cos 2\alpha$ ، $2\cos^2\alpha-1=\cos 2\alpha$

$\cos^2\alpha(2\cos^2\alpha-1)-\sin^2\alpha(2\sin^2\alpha-1)$

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

$\cos 2\alpha=1$ $\quad \sin^2 2\alpha+\underbrace{\cos^2 2\alpha}_{1}=1\Rightarrow \sin 2\alpha=0$ (۲)

الف) $-2\sin x\cos x+2 \quad [-\pi,\pi] \Rightarrow -\sin 2x+2 \quad T=\frac{2\pi}{\lvert b\rvert}=\frac{2\pi}{2}=\pi$ ✓    ب) $2\cos(\pi x+\frac{\pi}{2})+1 \quad [-\pi,2\pi] \quad T=\frac{2\pi}{\lvert b\rvert}=\frac{2\pi}{\pi}=2$ ✓  (۲)	۶
$f(x)\begin{cases}\cot x & 0<x<\frac{\pi}{4}\\ \sin x & x\leq 0\end{cases}$ $\cot\frac{\pi}{4}=1$  $R_f=[-1,+\infty)$ ✓  (۲)	۷
$f(x)=a+b\underbrace{\sin\alpha\cos\alpha}_{\frac{1}{2}\sin 2\alpha}\cos(2\alpha) \qquad cx=\alpha \Rightarrow a+b\times\frac{1}{4}\sin 4\alpha$ $\frac{1}{2}\sin 4\alpha$ $a+\frac{b}{4}\sin 4cx$ $\lvert\frac{b}{4}\rvert+a=4$ (max) $-\lvert\frac{b}{4}\rvert+a=0$ (min) $\Rightarrow \begin{cases}a=2\\ b=8\end{cases}$ $T=\frac{\pi}{2}-\frac{\pi}{10}=\frac{2\pi}{\omega}=\frac{2\pi}{4c}\Rightarrow c=\frac{\omega}{4}$ $\frac{bc}{a}=\frac{8\times\frac{\omega}{4}}{2}=\boxed{\omega}$ ✓ (۲)	۸
 $f(x)=a\cos bx+c$ علامت a به دلیل قرینه شدن نمودار است. $\lvert a\rvert+c=max=2$ $-\lvert a\rvert+c=min=-4 \Rightarrow c=-1,\ a=-3$ $T=\pi=\frac{2\pi}{\lvert b\rvert}\Rightarrow b=2 \qquad -3\cos 2x-1=f(x)$ $x=\alpha\Rightarrow -3\cos 2\alpha-1=0\Rightarrow \cos 2\alpha=-\frac{1}{3} \qquad 1+\tan^2 2\alpha=\frac{1}{\cos^2 2\alpha}$ $1+\tan^2 2\alpha=9\Rightarrow \lvert\tan 2\alpha\rvert=\sqrt{8}$ ✓ (۲)	۹
 $y=-\frac{1}{2}x+1$ $-\frac{1}{2}\times\frac{3}{2}+1=-\frac{3}{4}+1$ $T=3 \quad f(-34.5)=?$ $-34.5+1=-33.5=-3\times 11-0.5$ ۱۱ دوره تناوب کامل $f(-34.5)=f(1.5)=0.25$ ✓ (۲)	۱۰