۱۹ آفرین

نام و نام خانوادگی امیرعلی تنهایی راد .... پاسخنامه تشریحی تکلیف شماره ..۱۲.. کلاس دوازدهم پسر B ....

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$TB = \tan(90 - \alpha) = \cot\alpha \quad OT = 1 \quad OB^2 = OT^2 + TB^2 \Rightarrow OB^2 = 1 + \cot^2\alpha = \frac{1}{\sin^2\alpha}$

$OB = \frac{1}{\sin\alpha} \quad OA = 1 \quad AB = OB - OA = \frac{1}{\sin\alpha} - \frac{\sin\alpha}{\sin\alpha} = \frac{1 - \sin\alpha}{\sin\alpha}$ ✓

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$\frac{AB}{\sin(180 - \alpha)} = \frac{6}{\sin 45^\circ} \Rightarrow \frac{AB}{\sin\alpha} = \frac{6}{\frac{\sqrt{2}}{2}} \Rightarrow AB = \frac{6\sin\alpha}{\frac{\sqrt{2}}{2}} = \frac{12\sin\alpha}{\sqrt{2}}$

$\frac{AC}{\sin\alpha} = \frac{3}{\sin 30^\circ} \Rightarrow \frac{AC}{\sin\alpha} = \frac{3}{\frac{1}{2}} \Rightarrow AC = \frac{3\sin\alpha}{\frac{1}{2}} = 6\sin\alpha \Rightarrow \frac{AB}{AC} = \frac{\frac{12\sin\alpha}{\sqrt{2}}}{6\sin\alpha} = \sqrt{2}$ ✓

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$A\left|\begin{matrix}\frac{1}{2}\\ \frac{\sqrt{3}}{2}\end{matrix}\right. \quad B\left|\begin{matrix}\frac{\sqrt{3}}{2}\\ \frac{1}{2}\end{matrix}\right. \quad C\left|\begin{matrix}0\\ -1\end{matrix}\right. \quad \hat{C} = 45^\circ$

$AB = \sqrt{\left(\frac{\sqrt{3}-1}{2}\right)^2 + \left(\frac{1-\sqrt{3}}{2}\right)^2} = \sqrt{3} - 1 \qquad AC = \sqrt{}$

$BC = \sqrt{\left(\frac{\sqrt{3}}{2}\right)^2 + \frac{9}{4}} = \frac{\sqrt{13}}{2}$

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$S_{ABC} = \frac{1}{2} AB\, AC \sin 30^\circ = \frac{1}{2} \times \log_2 27 \times \log_3 16 \times \frac{1}{2} = \frac{1}{2} \times 3\log_2 3 \times 4\log_3 2 \times \frac{1}{2} =$

$\frac{1}{2} \times 3 \times 1 \times 4 \times 1 \times \frac{1}{2} = 3$ ✓

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$x - \cos\alpha = 0 \Rightarrow \cos\alpha = x \Rightarrow 4\cos^4\alpha - \cos^2\alpha - \sin^2\alpha(-\cos 2\alpha) = 1$

$\Rightarrow 4\cos^4\alpha - \cos^2\alpha + \sin^2\alpha\cos 2\alpha = \cos^2\alpha(\underbrace{2\cos^2\alpha - 1}_{\cos 2\alpha}) + \sin^2\alpha\cos 2\alpha = \cos 2\alpha(\underbrace{\cos^2\alpha + \sin^2\alpha}_{1}) = 1$

$\Rightarrow \cos 2\alpha = 1 \Rightarrow \sin^2 2\alpha + \cos^2 2\alpha = 1 \Rightarrow \sin^2 2\alpha + 1 = 1 \Rightarrow \sin^2 2\alpha = 0 \Rightarrow \sin 2\alpha = 0$ ✓

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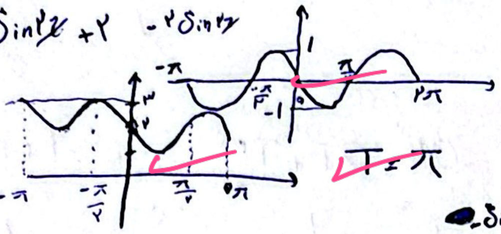
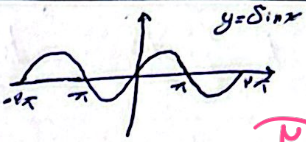
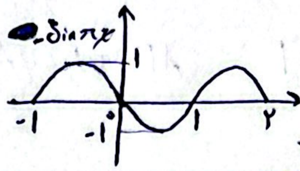
الف) $y=-2\sin^2 x+2$

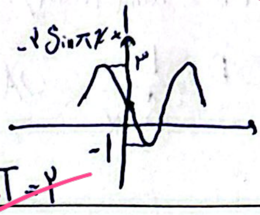




$T=\pi$

ب) $y=2\cos(\pi x+\frac{\pi}{2})+1=-2\sin(\pi x)+1$





$T=2$

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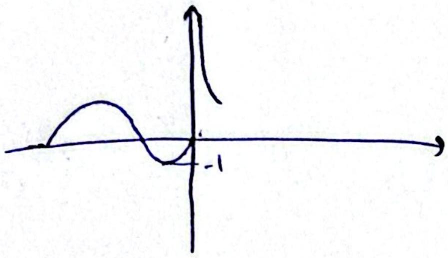

$R_f=[-1,+\infty)$

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$f(x)=a+b\underbrace{\sin(cx)\cos(cx)}_{\frac{1}{2}\sin(2cx)}\cos(2cx)\Rightarrow f(x)=a+b\times\frac{1}{2}\underbrace{\sin(2cx)\cos(2cx)}_{\frac{1}{2}\sin(4cx)}$

$\Rightarrow f(x)=a+b\times\frac{1}{4}\sin(4cx)=a+\frac{b}{4}\sin(4cx)\qquad T=\frac{\pi}{2}-\frac{\pi}{10}=\frac{2\pi}{5}$

$T=\frac{2\pi}{4c}=\frac{2\pi}{5}\Rightarrow 4c=5\Rightarrow \boxed{c=\frac{5}{4}}\qquad \begin{cases}a+\left|\frac{b}{4}\right|=4\\ a-\left|\frac{b}{4}\right|=0\end{cases}\Rightarrow \boxed{a=2}\quad \left|\frac{b}{4}\right|=2\Rightarrow |b|=8\Rightarrow \boxed{b=8}\ (b>0)\qquad \frac{\frac{8\times5}{4}}{2}=5$

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$T=\pi\qquad T=\frac{2\pi}{|b|}\Rightarrow |b|=2\Rightarrow b=\pm2 \xrightarrow[\text{تناوب نزولی}]{[illegible]} b=+2$

$\begin{cases}c+|a|=2\\ c-|a|=-4\end{cases}\Rightarrow c=-1\qquad |a|=3\Rightarrow a=-3\qquad f(x)=-3\cos2x-1$

$f(\alpha)=0\Rightarrow -3\cos2\alpha-1=0\Rightarrow -3\cos2\alpha=1\Rightarrow \cos2\alpha=\frac{-1}{3},\ \sin2\alpha=\pm\frac{2\sqrt2}{3}$

$|\tan2\alpha|=2\sqrt2$

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$f(-34.5)=f(-34.5+3n)\xrightarrow{n=12}f(-34.5)=f(1.5)$

$f(x)=-\frac{1}{2}x+1\quad 1\le x<2\Rightarrow f(1.5)=-\frac{1}{2}\times\frac{3}{2}+1=-\frac{3}{4}+\frac{4}{4}=\frac{1}{4}$

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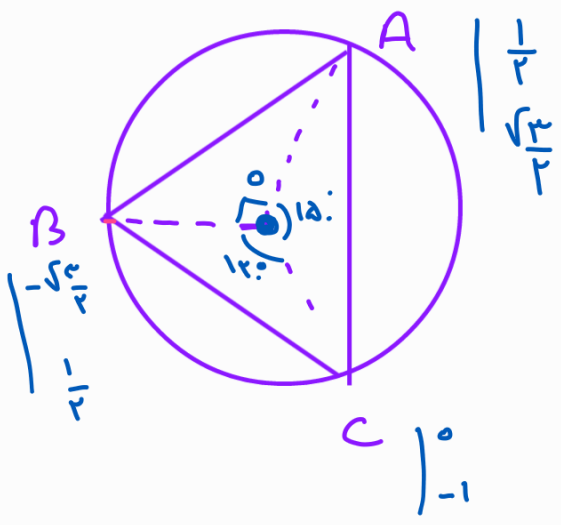
سوال ۳



$S_{AOC} = 1 \times 1 \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

$S_{OAB} = 1 \times 1 \times \frac{1}{2} = \frac{1}{2}$

$S_{OBC} = 1 \times 1 \times \frac{1}{2} \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{4}$

$S_{ABC} = \frac{1}{2} + \frac{1}{4} + \frac{\sqrt{3}}{4} = \frac{2+\sqrt{3}}{4}$

$BC^2 = 1^2 + 1^2 - 1 \times 1 \times 2 \times -\frac{1}{2} = 1 + 1 + 1 = 3 \rightarrow BC = \sqrt{3}$

$AC^2 = 1^2 + 1^2 - 1 \times 1 \times 2 \times -\frac{\sqrt{3}}{2} = 1 + 1 + \sqrt{3} \rightarrow AC = \sqrt{2+\sqrt{3}}$

$AB^2 = 1^2 + 1^2 \rightarrow AB = \sqrt{2}$

$P_{ABC} = \sqrt{2} + \sqrt{3} + \sqrt{2+\sqrt{3}}$