نام و نام خانوادگی ...بهاره ایران... پاسخنامه تشریحی تکلیف شماره ..۱۴.. کلاس ...دوازدهم تجربی A...

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$O_1 = \beta \quad \alpha+\beta = 90 \to \beta = 90-\alpha \quad \sin\beta = \frac{BT}{OB} \quad \cos\beta = \frac{OT}{OB} = \cos(90-\alpha)$

$$\to \sin\alpha = \frac{OT}{OB} = \frac{1}{OA+AB} = \frac{1}{1+AB} \to AB = \frac{1}{\sin\alpha} - 1$$

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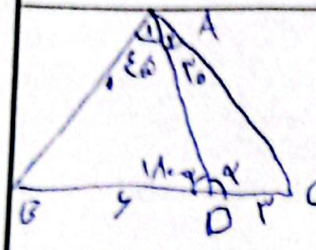

قضیه سینوس ها:

$$\frac{\sin A_1}{BD} = \frac{\sin(180-\alpha)}{AB} \to \frac{\sqrt2}{2\times6} = \frac{\sin\alpha}{AB} \to AB = \frac{12\sin\alpha}{\sqrt2}$$

$$\frac{\sin A_2}{DC} = \frac{\sin\alpha}{AC} = \frac{1}{2\times3} = \frac{\sin\alpha}{AC} \to AC = 6\sin\alpha$$

$$\frac{AB}{AC} = \frac{12\sin\alpha}{\sqrt2\times6\sin\alpha} = \sqrt2$$

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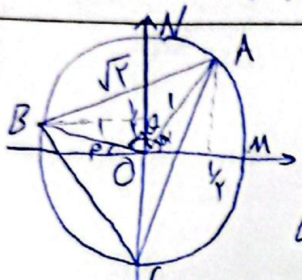

$\cos\alpha = 1/2 \to \alpha = 60 \quad AB^2 = OB^2 + OA^2 \to AB = \sqrt2$

$\sin\beta = 1/2 \to \beta = 30 \quad \alpha+\beta+\theta = 180 \to \theta = 90^\circ$

B زاویه محاطی است که اندازه آن برابر نصف کمان روبرو است:

$$\hat B = \frac12 \widehat{AC} = \frac12(AM+MC) = \frac12(60+90) = 75^\circ$$

C زاویه محاطی است که اندازه آن نصف کمان روبرو است:

$C = \frac12 \widehat{BA} = 90\times\frac12 = 45^\circ \qquad \hat A = 180-45-75 = 60$

ادامه در سوال بعد:

ادامه سوال ۳

ب) قضیه سینوس ها:

$$\frac{\sin C}{BA} = \frac{\sin B}{AC} = \frac{\sin A}{BC} \to \frac{\sqrt2}{2\times\sqrt2} = \frac{\sin 60}{BC} \to BC = \sqrt3$$

$$\frac{\sqrt2}{2\times\sqrt2} = \frac{\sin(75)}{AC} = \frac{\sin(30+45)}{AC} = \frac{\sin30\cos45+\cos30\sin45}{AC} = \frac{\sqrt2+\sqrt6}{4AC} \to AC = \frac{\sqrt2+\sqrt6}{2}$$

محیط $ABC = \sqrt2+\sqrt3+\frac{\sqrt2+\sqrt6}{2} = \frac{3\sqrt2+2\sqrt3+\sqrt6}{2}$

الف)

$$S_{\hat{ABC}} = \frac12\times \overline{AB}\times\overline{AC}\times\sin A = \frac12\times\sqrt2\times\frac{\sqrt2+\sqrt6}{2}\times\frac12 = \frac{2+2\sqrt3}{8} = \frac{1+\sqrt3}{4}$$

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

$$2\cos^4\alpha - \cos^2\alpha - 2\sin^4\alpha + \sin^2\alpha = 2((\cos^2\alpha - \sin^2\alpha)(\cos^2\alpha+\sin^2\alpha))$$

$$-(\cos^2\alpha - \sin^2\alpha) = 2\cos2\alpha - \cos2\alpha = \cos2\alpha = 1$$

$$\sin^2 2\alpha + \cos^2 2\alpha = 1 \to \sin2\alpha = 0$$

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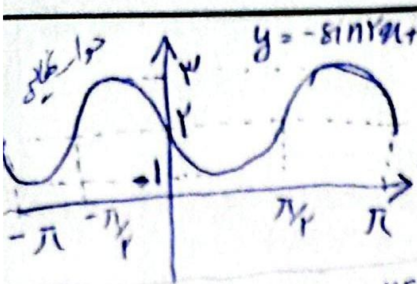
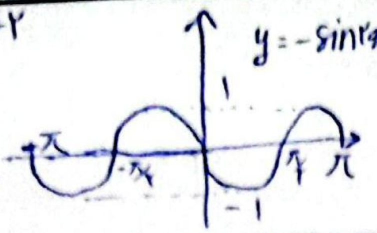
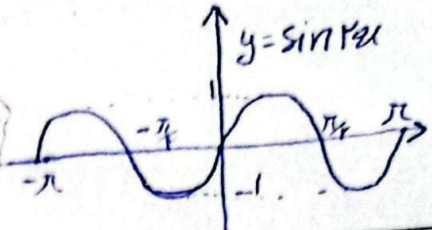
الف) $T=\frac{2\pi}{|b|}=\frac{2\pi}{2}=\pi$ (دوره تناوب)

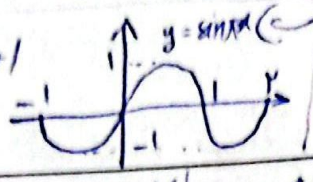
$y=-2\sin 2x+2$







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



(دوره): $T=\frac{2\pi}{|b|}=\frac{2\pi}{\pi}=2$

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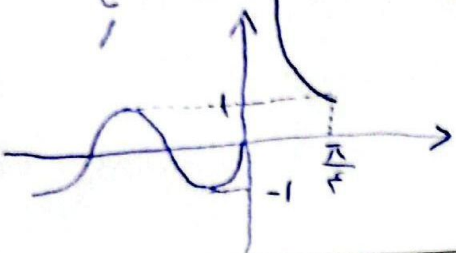
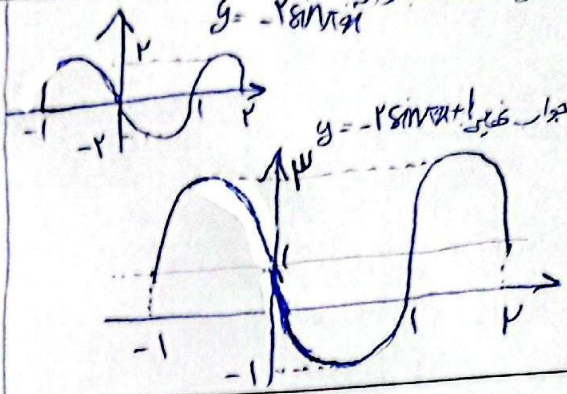
$f(x)=\begin{cases}\cot x & 0<x<\frac{\pi}{4}\\ \sin x & x\leq 0\end{cases}$ $\quad R_f=[-1,+\infty)$





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$f(x)=a+\frac{b}{2}\sin 2cx\cos 2cx=a+\frac{b}{4}\sin 4cx$

$T=\frac{\pi}{2}-\frac{\pi}{10}=\frac{2\pi}{5}=\frac{2\pi}{|b|}\to |b|=4c=5\to c=\pm\frac{5}{4},\ c>0\to c=\frac{5}{4}$

$\frac{b}{4}=2\to b=8,\ a=2$

$\frac{bc}{a}=\frac{8\times\frac{5}{4}}{2}=5$

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$f(x)=a\cos(bx)+c \quad T=\pi=\frac{2\pi}{|b|}\to|b|=2\to b=\pm 2,$

$\cos 2x=\cos(-2x) \quad \max f=2 \quad \min f=-4\to a=-3\to c=1$

$x=\alpha\to -3\cos 2\alpha-1=0\to\cos 2\alpha=-\frac{1}{3}$

$1+\tan^2 2\alpha=\frac{1}{\cos^2 2\alpha}\to\tan^2 2\alpha=9-1\to|\tan 2\alpha|=2\sqrt{2}$

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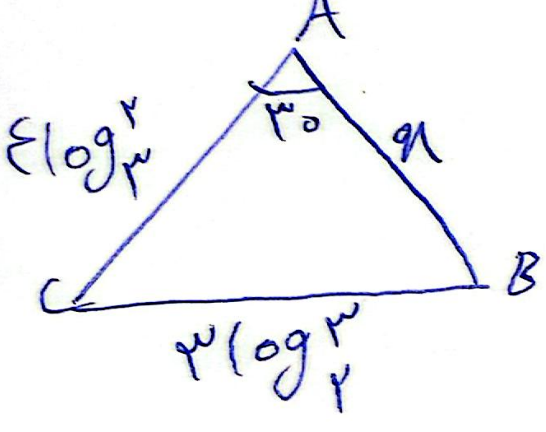
$f(-34.5)=f(\underbrace{-12\times 3}_{\text{دوره تناوب}}+1.5)=f(1.5)$

$\begin{matrix}(2,0)\\(0,1)\end{matrix}\to a=\frac{0-1}{2-0}=-\frac{1}{2},\ b=1\to y=-\frac{1}{2}x+1$

$f(1.5)=f(-34.5)=-\frac{1}{2}\times\frac{15}{10}+1=\frac{1}{4}$



سوال ۴: با فرض متساوی الاساقین بودن مثلث داریم

$$x = 4\log_{3}^{2} \longrightarrow S_{A\hat{B}C} = \frac{1}{2} \times \overline{AC} \times \overline{AB} \times \sin A =$$

$$\frac{1}{2} \times 16\left(\log_{3}^{2}\right)^{2} \times \frac{1}{2} = 4\left(\log_{3}^{2}\right)^{2}$$