نام و نام خانوادگی ......آریا طائی........ پاسخنامه تشریحی تکلیف شماره ...۱۴... کلاس ...یازدهم B

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$\overline{BT} = \tan B = \tan(90-\alpha) = \cot\alpha$

$\overline{BT}^2 + \overline{OT}^2 = \overline{OB}^2 \rightarrow (\cot\alpha)^2 + (1)^2 = \overline{OB}^2 \rightarrow \overline{OB}^2 = \frac{1}{\sin\alpha^2} \Rightarrow \overline{OB} = \frac{1}{\sin\alpha}$

$\overline{OB} = \overline{AO} + \overline{AB} \rightarrow \overline{AB} = \overline{OB} - \overline{AO} = \frac{1}{\sin\alpha} - 1 = \frac{1-\sin\alpha}{\sin\alpha}$

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$S_{\overset{\triangle}{ABD}} = \frac{\overline{AB}\times\overline{AD}\times\sin 45^\circ}{2} = \frac{\overline{AH}\times\overline{BD}}{2} = \frac{\overline{AH}\times 6}{2}$

$S_{\overset{\triangle}{ADC}} = \frac{\overline{AD}\times\overline{AC}\times\sin 30^\circ}{2} = \frac{\overline{AH}\times\overline{DC}}{2} = \frac{\overline{AH}\times 3}{2}$

$\rightarrow \frac{\overline{AB}\times\overline{AD}\times\frac{\sqrt2}{2}}{\overline{AD}\times\overline{AC}\times\frac12} = \frac{\overline{AH}\times 6}{\overline{AH}\times 3} \rightarrow \frac{\overline{AB}}{\overline{AC}} = \frac{2}{\sqrt2} = \sqrt2$

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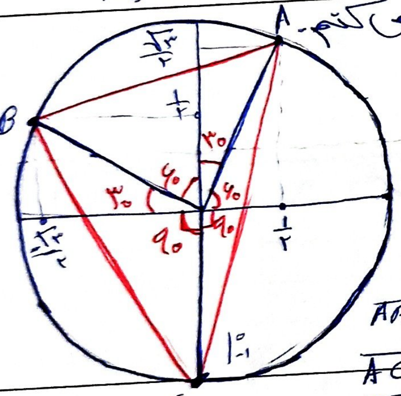
با توجه به اینکه $\cos 60 = \frac12$ و $\sin 150 = \frac12$ می‌باشند دایره را کامل می‌کنیم.



$S_{\overset{\triangle}{ABC}} = S_{\overset{\triangle}{AOC}} + S_{\overset{\triangle}{BOC}} + S_{\overset{\triangle}{AOB}}$

$S_{\overset{\triangle}{ABC}} = \frac12\times1\times1\times\sin 150 + \frac12\times1\times1\times\sin 120 + \frac12\times1\times1\times\sin 90$

$S_{\overset{\triangle}{ABC}} = \frac14 + \frac{\sqrt3}{4} + \frac24 = \frac{3+\sqrt3}{4}$

فاصلهٔ نقاط را پیدا کرده (با توجه به نقاط آن)

$\overline{AB} = \sqrt{2+\sqrt3}$

$\overline{AC} = \sqrt{2+\sqrt3}$

$\overline{BC} = \sqrt3$

$\rightarrow P = 2\sqrt{2+\sqrt3} + \sqrt3$

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$S_{\overset{\triangle}{ABC}} = \frac12\times\overline{AB}\times\overline{AC}\times\sin 30^\circ = \frac12\times\log_2 27\times\log_3 16 = \frac12\times\frac{3}{\log_3 2}\times 4\log_3 2 = 6$

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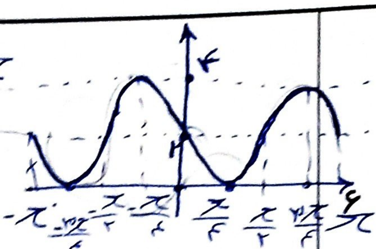
$\cos\alpha$ را در معادله قرار می‌دهیم.

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

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

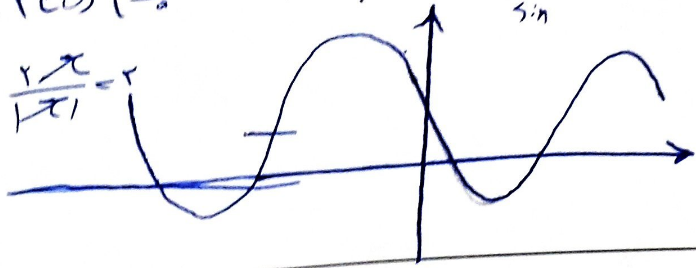
$\rightarrow \cos 2\alpha = 1 \rightarrow \cos^2 2\alpha + \sin^2 2\alpha = 1 \rightarrow \sin 2\alpha = 0$

الف) $y = -2\sin x\cos x + 2 = -\sin 2x + 2$ $\quad T = \frac{2\pi}{|2|} = \pi$



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

$T = \frac{2\pi}{|\pi|} = 2$



چگونه وقتی $T=2$ هست از $-\pi$ تا 2π رسم کنم؟

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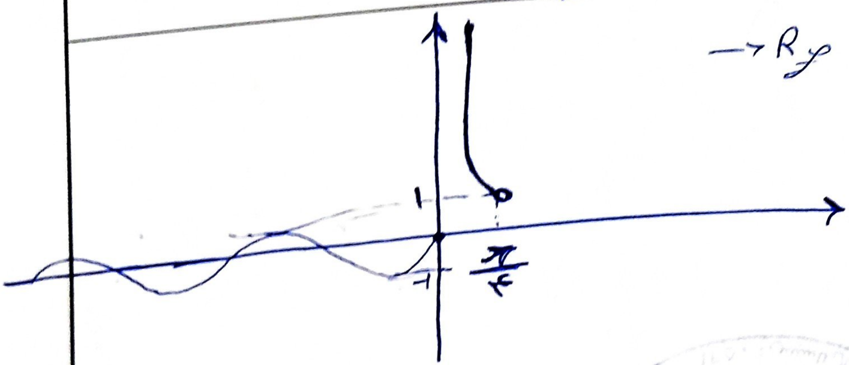

$\to R_f = [-1, +\infty)$

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

$T = \frac{4\pi}{10} = \frac{2\pi}{4c\pi} \to c = \frac{20}{4\times4} = \boxed{\frac{5}{4}}$ $\qquad \frac{bc}{a} = \frac{\frac{8\times5}{4}}{2} = \boxed{5}$

$\frac{y_{max}-y_{min}}{2} = \frac{b}{4} \to \frac{4-0}{2} = \frac{b}{4} \to \boxed{b=8}$

$\frac{y_{max}+y_{min}}{2} = a \to \frac{4}{2} = a \to \boxed{a=2}$

چرا با اینکه نمودار sin هست اما شروع نمودار بروی محور y ها از y_{min} اتفاق افتاده؟ مگر نباید متوسط شروع شود؟

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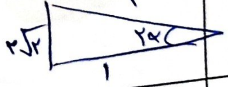
$T = \pi = \frac{2\pi}{b} \to \boxed{b=2}$

$|a| = \frac{y_{max}-y_{min}}{2} = \frac{2+4}{2} = 3 \to \boxed{a=-3}$

$c = \frac{y_{max}+y_{min}}{2} = \frac{2-4}{2} = \boxed{-1}$



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

$\to |\tan 2\alpha| = \boxed{2\sqrt{2}}$

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$f(x) = \begin{cases} 2x+2 & -1 \le x < 0 \\ \frac{-1}{2}x + 1 & 0 \le x < 2 \end{cases}$

$f(-34.5) = f(3\times(-12)+1.5) = f(1.5) = \frac{-1}{2}\times\frac{3}{2} + 1 = \frac{-3}{4} + 1 = \boxed{\frac{1}{4}}$