نام و نام خانوادگی ......آتریسا جلیلی...... پاسخنامه تشریحی تکلیف شماره ..۱۲... کلاس ......دوازدهم ریاضی A......

۱

$B(1,\tan\theta)$

$A(\cos\theta,\sin\theta)$

$AB^2=(1-\cos\theta)^2+(\tan\theta-\sin\theta)^2 \to AB=\dfrac{1-\cos\theta}{\cos\theta}$

$a=\frac{\pi}{2}-\theta \to \sin a=\cos\theta \to \boxed{AB=\dfrac{1-\sin a}{\sin a}}$

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$\dfrac{BD}{DC}=2=\dfrac{6}{3}=\dfrac{AB\sin 45}{AC\sin 30}=\dfrac{\frac{\sqrt{2}}{2}AB}{\frac{1}{2}AC}=2 \to \sqrt{2}\,\dfrac{AB}{AC}=2 \to \boxed{\dfrac{AB}{AC}=\sqrt{2}}$

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$x_A=\frac{1}{2}\,,\ y_A=\sqrt{1-(\frac{1}{2})^2}=\frac{\sqrt{3}}{2}$

$y_B=\frac{1}{2}\,,\ x_B=-\frac{\sqrt{3}}{2}$

$x_C=0\,,\ y_C=-1$

زاویه A ۶۰ درجه است و B ۱۵۰ درجه سپس اختلاف آن‌ها ۹۰ درجه است بنابراین زاویه C که محاطی است ۴۵ درجه است

$AB=\sqrt{(x_B-x_A)^2+(y_B-y_A)^2}=\sqrt{(\frac{-\sqrt{3}}{2}-\frac{1}{2})^2+(\frac{1}{2}-\frac{\sqrt{3}}{2})^2}=\sqrt{2}$

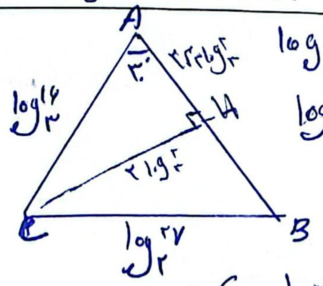
$BC=\sqrt{\frac{3}{4}+\frac{9}{4}}=\sqrt{3}$

$CA=\sqrt{\frac{1}{4}+(\frac{\sqrt{3}+2}{2})^2}=\sqrt{2+\sqrt{3}}$

الف) $S=\frac{1}{2}\sin 45\times BC\times AC=\frac{\sqrt{6}}{4}\times\sqrt{2+\sqrt{3}}$

ب) $P=AB+BC+CA=\sqrt{2}+\sqrt{3}+\sqrt{2+\sqrt{3}}$

۴



$S_{ABC}=?$

$\log_3^{16}=4\log_3^2$

$\log_2^{27}=3\log_2^3$

$AH=4\log_3^2\times\cos 30=2\sqrt{3}\log_3^2$

$CH=\sqrt{(4\log_3^2)^2-(2\sqrt{3}\log_3^2)^2}=2\log_3^2$

$BH=\sqrt{(3\underbrace{\log_2^3}_{\frac{1}{\log_3^2}})^2-(2\log_3^2)^2}=\dfrac{\sqrt{9-4(\log_3^2)^4}}{\log_3^2}$

$S=\frac{1}{2}\sin 30\times \overbrace{AB}^{AH+BH}\times AC$

$S=\frac{1}{2}\times\sin 30\times 4\log_3^2\times\left(\dfrac{\sqrt{9-4(\log_3^2)^4}}{\log_3^2}+2\sqrt{3}\log_3^2\right) \to \boxed{S=\sqrt{9-4(\log_3^2)^4}+2\sqrt{3}(\log_3^2)^2}$

۵

$x=\cos a \to f(\cos a)=2\cos^4a-\cos^2a-\sin^2a(2\sin^2a-1)=2\cos^4a-\cos^2a-2\sin^4a+\sin^2a$

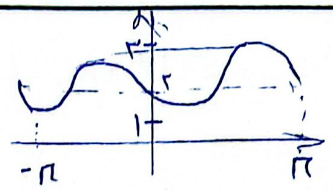
$=2\underbrace{(\cos^4a-\sin^4a)}_{(\underbrace{\sin^2a+\cos^2a}_{1})(\cos^2a-\sin^2a)}-(\cos^2a-\sin^2a)=2(\cos^2a-\sin^2a)-(\cos^2a-\sin^2a)$

$=\cos^2a-\sin^2a=\cos 2a=1 \xrightarrow[\cos^2 2a+\sin^2 2a=1]{} \sin 2a=0$

الف) $\Rightarrow y = -\sin 2x + 2 \qquad T = \frac{2\pi}{|b|} = \pi$

$[-\pi, \pi]$

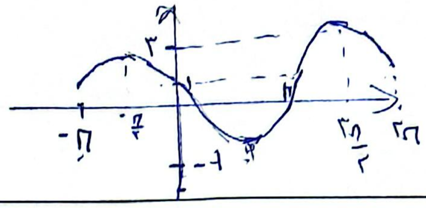
با نقطه دادن نمودار را رسم می کنیم

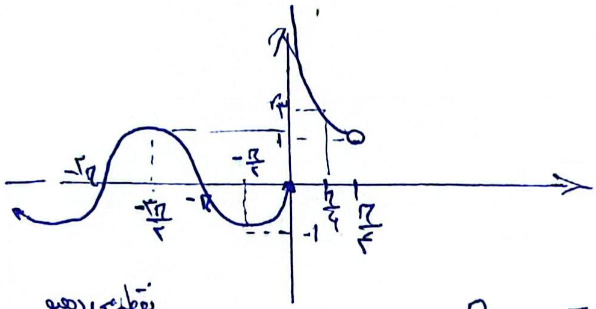


ب) $y = 2\cos\left(x + \frac{1}{2}\right)\pi + 1 \qquad T = \frac{2\pi}{|\pi|} = 2$

$= 2\cos\left(x\pi + \frac{\pi}{2}\right) + 1$

$[-\pi, 2\pi]$





نقطه می دهیم

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

$f(x) = a + b\sin(cx)\cos(cx)\cos(2cx) = a + b\frac{1}{4}\sin(4cx) = 2 + 2\sin 5x$

$\underbrace{\sin(cx)\cos(cx)}_{\frac{1}{2}\sin 2cx}$, $\quad \underbrace{\frac{1}{2}\sin 2cx \cos(2cx)}_{\frac{1}{4}\sin 4cx}$

$T = \frac{2\pi}{|b|} = \frac{2\pi}{5} \Rightarrow |4c| = 5 \xrightarrow{c>0} \boxed{c = \frac{5}{4}}$

$T = \frac{\pi}{2} - \frac{-\pi}{10} = \frac{2\pi}{5}$

$max = \left|\frac{1}{4}b\right| + a = 4$
$min = -\left|\frac{1}{4}b\right| + a = 0$ $\Rightarrow \boxed{a = 2}$

$\boxed{b = \pm 8}$ $\xrightarrow[\text{و با max شروع نشده}]{\text{چون نمودار نزولی است}}$ $\boxed{b = 8}$

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

$max = |a| + c = 2$
$min = -|a| + c = -4$ $\Rightarrow \boxed{c = -1}$

$\boxed{a = \pm 3} \xrightarrow[\text{زیرا با min شروع شده}]{} \boxed{a = -3}$

$T = \pi$

$T = \frac{2\pi}{|b|} = \pi \to |b| = 2 \to b = \pm 2$ ✓

برای فرقی ندارد

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

$\sin^2 2a = 1 - \cos^2 2a = 1 - \frac{1}{9} = \frac{8}{9} \Rightarrow \sin 2a = \pm\frac{2\sqrt{2}}{3} \Rightarrow |\tan 2a| = \left|\frac{\pm\frac{2\sqrt{2}}{3}}{\frac{-1}{3}}\right| = \boxed{2\sqrt{2}}$

$T = 3$

$\to f(x+3) = f(x)$

$x = -34.5 + 3k \Rightarrow -1 \leq -34.5 + 3k \leq 2 \to k = 12 \Rightarrow x = -34.5 + 36 = 1.5$

$-1 \leq x \leq 2$

$\to f(-34.5) = f(1.5) \Rightarrow f(1.5) = -\frac{1}{2}x + 1 = -\frac{1}{2}\left(\frac{3}{2}\right) + 1 = -\frac{3}{4} + 1 = \boxed{\frac{1}{4}}$