نام و نام خانوادگی ....فاطمه ربیعی.... پاسخنامه تشریحی تکلیف شماره ..۲۱... کلاس ..دوازدهم ریاضی A.....

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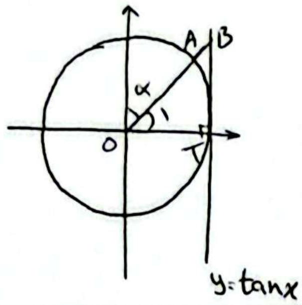


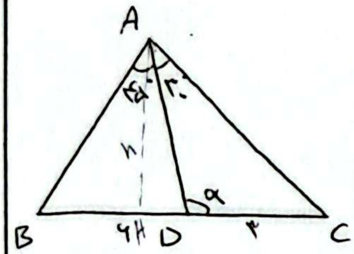
$\hat\alpha+\hat O_1=\frac{\pi}{2} \Rightarrow \sin\alpha=\cos\hat O_1$

$\cos\hat O_1=\frac{OT}{OB}=\frac{OT}{OA+AB} \xrightarrow{\text{دایره مثلثاتی}} \cos\hat O_1=\frac{1}{1+AB}$

$\sin\alpha=\frac{1}{1+AB} \Rightarrow 1+AB=\frac{1}{\sin\alpha}$

$AB=\frac{1-\sin\alpha}{\sin\alpha}$

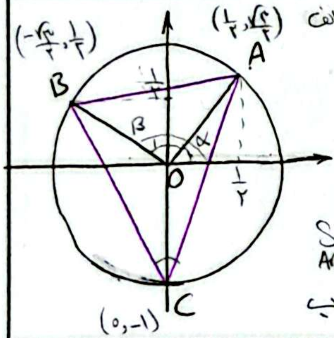
۲



$\Rightarrow \frac{S_{\triangle ABD}}{S_{\triangle ADC}}=\frac{\cancel{h}\times 6\times\cancel{\frac12}}{\cancel{h}\times 4\times\cancel{\frac12}}=\frac{AB\times\cancel{AD}\times\cancel{\frac12}\times\sin 45}{AC\times\cancel{AD}\times\cancel{\frac12}\times\sin 30}$

$\frac{AB}{AC}=\frac{6}{4}\times\frac{\frac12}{\frac{\sqrt2}{2}}=\boxed{\sqrt2}$

۳



الف) $\cos\alpha=\frac12 \Rightarrow \alpha=30°$

$\sin\beta=\frac12 \Rightarrow \beta=150°$ $\Big\} \Rightarrow \hat O_1=150-30=120°$

$\Rightarrow \hat C=\frac12\hat O_1 \Rightarrow \hat C=60°$

$AC=\sqrt{(\frac12-0)^2+(\frac{\sqrt3}{2}+1)^2}=\frac{\sqrt{5+2\sqrt3}}{2}$ $\quad BC=\sqrt{(-\frac{\sqrt3}{2}-0)^2+(\frac12+1)^2}=\frac{2\sqrt3}{2}=\sqrt3$

$S_{ABC}=AC\times BC\times\sin\underset{60}{\hat C}\times\frac12 \Rightarrow \frac{\sqrt{5+2\sqrt4}}{2}\times\frac{\cancel{2}\sqrt3}{\cancel{2}}\times\frac{\sqrt3}{2}\times\frac12=\boxed{\frac{3\sqrt{5+2\sqrt3}}{8}}$

ب) $AB=\sqrt{(\frac12+\frac{\sqrt3}{2})^2+(\frac{\sqrt3}{2}-\frac12)^2}=\sqrt2 \Rightarrow \boxed{\text{محیط}=\sqrt3+\sqrt2+\frac{\sqrt{5+2\sqrt3}}{2}}$

۴

$S_{\triangle ABC}=\frac12 AB\times AC\times\sin\hat A \Rightarrow \frac12\log_2 27\times\log_3 16\times\frac12=\frac{1}{\cancel{4}}\times 3\underbrace{\log_2 3\times\cancel{4}\log_3 2}_{1}=\boxed{3}$

۵

$2x^4-x^2-\sin^2\alpha\,(\underbrace{2\sin^2\alpha-1}_{\sin^2\alpha-\cos^2\alpha})$ $\quad x-\cos\alpha$

$\xrightarrow[\cos\alpha]{x \text{ به جای}} \cos^4\alpha-\cos^2\alpha+\cos^4\alpha-\sin^4\alpha+\sin^2\alpha\cos^2\alpha$

$\underbrace{\cos^2\alpha(\cos^2\alpha-1)}_{-\cos^2\alpha\sin^2\alpha}$ $\quad \underbrace{(\sin^2\alpha+\cos^2\alpha)(\cos^2\alpha-\sin^2\alpha)}_{\cos2\alpha}$

۱

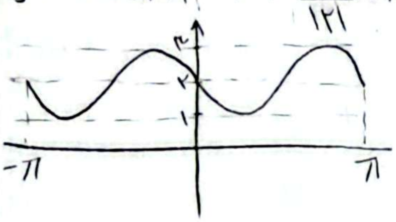
$\Rightarrow -\cancel{\cos^2\alpha\sin^2\alpha}+\cos2\alpha+\cancel{\sin^2\alpha\cos^2\alpha}=\cos2\alpha=1$

$\Rightarrow \sin2\alpha=\sqrt{1-1}=\boxed{0}$

۶

الف) $y=-2\sin x\cos x+2$

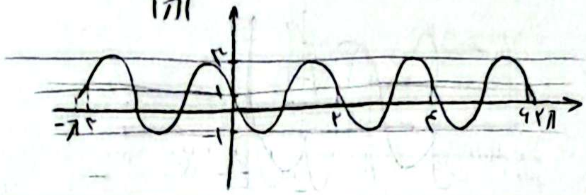
$y=-\sin 2x+2 \Rightarrow T=\dfrac{2\pi}{|2|}=\pi$



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

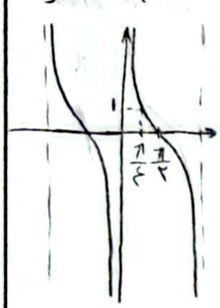
$y=2\cos\left(\pi x+\frac{\pi}{2}\right)+1=-2\sin \pi x+1$

$\Rightarrow T=\dfrac{2\pi}{|\pi|}=2$

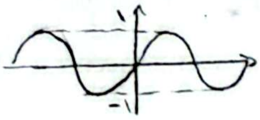


۷

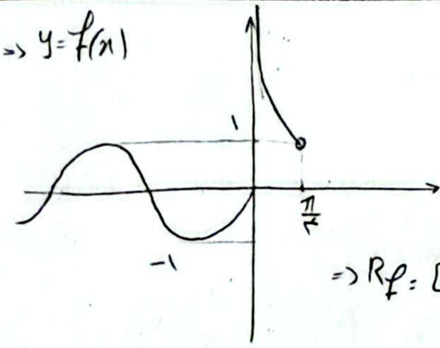
$y=\cot x$



$y=\sin x$



$\Rightarrow y=f(x)$



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

۸

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

$T=\dfrac{2\pi}{|4c|} \Rightarrow \dfrac{\cancel{4}^{2}\pi}{10}=\dfrac{\cancel{4}\pi}{|4c|} \rightarrow |4c|=5 \xRightarrow{c>0} c=\frac{5}{4}$

$\underset{\text{بوده}}{\max-\min=2} \xrightarrow{\times|b|} \underset{\text{شده}}{\max-\min=4} \Rightarrow |b|=2 \xRightarrow[b<0]{c>0} b=-2 \quad \Rightarrow \dfrac{bc}{a}=\dfrac{-2\times\frac{5}{4}}{2}=\boxed{-\frac{5}{4}}$

نقطه ابتدایی

$\underset{\text{بوده}}{0} \xrightarrow{+a} \underset{\text{شده}}{2} \Rightarrow a=2 \quad$ یا $\quad (a+|b|=4 \Rightarrow a=2)$

۹

$f(x)=a\cos bx+c$

$T=\dfrac{2\pi}{|b|} \Rightarrow \pi=\dfrac{2\pi}{|b|} \Rightarrow |b|=2 \xRightarrow[\text{ضابطه } \pm b]{\cos bx} b=2$

$\left.\begin{array}{l}|a|+c=2\\-|a|+c=-4\end{array}\right\} \rightarrow \begin{array}{l}2c=-2\\c=-1\end{array} \quad \begin{array}{l}|a|-1=2\\|a|=3\\a=-3\end{array}$

با توجه به نمودار $(a<0)$

$\Rightarrow f(x)=-3\cos 2x-1$

$-3\cos 2\alpha-1=0$

$3\cos 2\alpha=-1$

$\cos 2\alpha=-\frac{1}{3} \Rightarrow 1+\tan^2 2\alpha=\dfrac{1}{\cos^2 2\alpha}=\dfrac{1}{\frac{1}{9}}=9$

$\tan^2 2\alpha=8 \Rightarrow \boxed{|\tan 2\alpha|=2\sqrt{2}}$

۱۰

$T=3 \Rightarrow f(x)=f(x+3k) \quad k\in\mathbb{Z} \quad \Rightarrow f(-34{,}5)=f(1{,}5-36)=f(1{,}5-12(3))=f(1{,}5)$

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

$0\leq x<3$