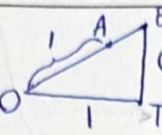
نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

۱

$BT = \tan\hat{O}_1 = \cot\alpha \rightarrow$ 

$\cot\alpha \rightarrow AB = \sqrt{\cot^2\alpha + 1} - 1 = \sqrt{\frac{1}{\sin^2\alpha}} - 1$

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

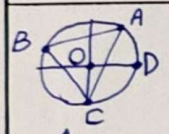
۲

$\frac{AC}{\sin\alpha} = \frac{4}{\sin 30} = \frac{4}{\frac{1}{2}} = 8 \rightarrow 8\sin\alpha = AC$

$\frac{AB}{\sin(150-\alpha)} = \frac{8}{\sin 45} = \frac{8}{\frac{\sqrt{2}}{2}} = 8\sqrt{2} \rightarrow 8\sqrt{2}\sin\alpha = AB$

$\Rightarrow \frac{AB}{AC} = \frac{8\sqrt{2}\sin\alpha}{8\sin\alpha} = \sqrt{2}$

۳



$x_A = \cos D\hat{O}A = \frac{1}{2} \rightarrow D\hat{O}A = 60^\circ$ ، $y_B = \sin D\hat{O}B = \frac{1}{2} \rightarrow D\hat{O}B = 150^\circ$

$B\hat{O}C = 30 + 90 = 120^\circ \rightarrow S_{B\hat{O}C} = \frac{1}{2} \times 1 \times 1 \times \sin 120 = \frac{\sqrt{3}}{4}$

$A\hat{O}B = 30 + 60 = 90 \rightarrow S_{A\hat{O}B} = \frac{1}{2} \times 1 \times 1 \times \sin 90 = \frac{1}{2}$

$A\hat{O}C = 60 + 90 = 150 \rightarrow S_{A\hat{O}C} = \frac{1}{2} \times 1 \times 1 \times \sin 150 = \frac{1}{4}$

$\rightarrow S_{AB\hat{C}} = \frac{1}{2} + \frac{1}{4} + \frac{\sqrt{3}}{4} = \frac{3+\sqrt{3}}{4}$

$AB = 1^2 + 1^2 - 2 \times 1 \times 1 \times \cos 90 = 2$

$AC = 1^2 + 1^2 - 2 \times 1 \times 1 \times \cos 150 = 2 + \sqrt{3}$

$BC = 1^2 + 1^2 - 2 \times 1 \times 1 \times \cos 120 = 1$

$\rightarrow$ محیط $= 5 + \sqrt{3}$

۴

$\frac{BC}{\sin\hat{A}} = \frac{AC}{\sin\hat{B}} \rightarrow \frac{\log_2 27}{\frac{1}{2}} = \frac{\log_3 16}{\sin B} \rightarrow \sin\hat{B} = \frac{\frac{1}{2}\log_3 16}{\log_2 27} = \frac{2}{3}\left(\frac{\frac{\log 2}{\log 3}}{\frac{\log 3}{\log 2}}\right) = \frac{2}{3}\left(\frac{\log 2}{\log 3}\right)^2$

$\rightarrow \sin B = \frac{2}{3}(\log_3 2)^2$

؟

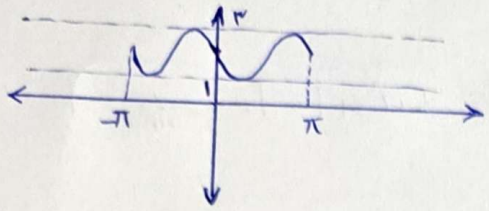
۵

$\frac{2\cos^4 x - \cos^2 x}{\cos^2 x(2\cos^2 x - 1)} - \sin^2 x \times \frac{(2\sin^2 x - 1)}{-\cos 2x} = \cos 2x\,(\sin^2 x + \cos^2 x) = \cos 2x = 1$

$\rightarrow \sin 2x = 0$

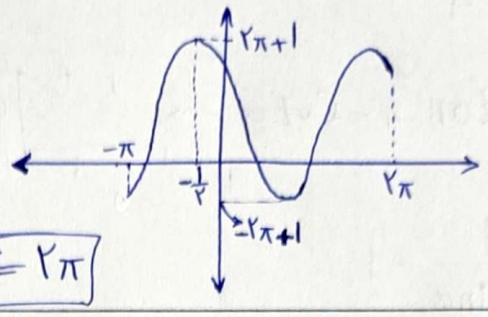
۶

الف) $-۲\sin x\cos x+۲=-\sin ۲x+۲$



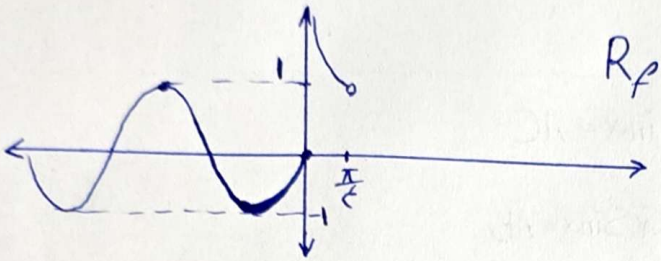
$T=\pi$

ب) $۲\pi\cos\left(x+\frac{۱}{۲}\right)+۱$



$T=۲\pi$

۷



$R_f=[-۱,+\infty)$

۸

$f(x)=a+\frac{b}{۲}\sin(۲cx)\cos(۲cx)=a+\frac{b}{۴}\sin(۴cx)$

$T=\frac{\pi}{۲}-\frac{\pi}{۱۰}=\frac{۲\pi}{۵}=\frac{۲\pi}{|۴c|}\rightarrow\frac{۵}{۴}=|c|\xrightarrow{c>۰}c=\frac{۵}{۴}$

$\frac{b}{۴}=۲\rightarrow b=۸\ ,\ a=۲\rightarrow\frac{bc}{a}=\frac{۸\times\frac{۵}{۴}}{۲}=۵$

۹

$ab<۰$ $\quad max-min=۶\rightarrow|a|=\frac{۶}{۲}=۳$, $c=-۱$, $T=\pi=\frac{۲\pi}{|b|}\rightarrow|b|=۲$

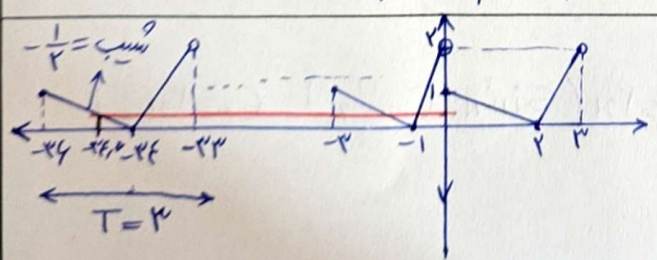
- $a=-۳, b=۲$ ✓
- $a=۳, b=-۲$ ✗

$\rightarrow f(x)=-۳\cos۲x-۱\rightarrow f(\alpha)=۰$

$\rightarrow -۳\cos۲\alpha=۱\rightarrow\cos۲\alpha=-\frac{۱}{۳}$ $\quad \frac{۱}{\cos^۲۲\alpha}-۱=\tan^۲۲\alpha$ $\quad ۹-۱=۸$

$\rightarrow\tan^۲۲\alpha=۸\longrightarrow|\tan۲\alpha|=۲\sqrt{۲}$

۱۰



$\left[\frac{-۳۴,۵}{۳}\right]=-۱۲$

$۲\times(-۱۲)=-۲۴$

پاسخ: $\frac{۱}{۴}$