Subject: ۱۴,۵ تولند زادهان page: ( )

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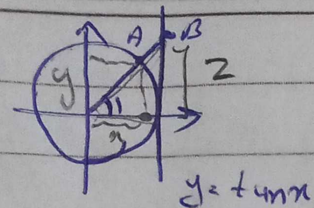


① $x = \cos(90-\alpha) = \sin\alpha \qquad z = \tan(90-\alpha)$

$y = \sin(90-\alpha) \qquad z = \cot\alpha$ ۲

$1+z^2 = OB^2 \qquad 1+\cot^2\alpha = OB^2$

$1+\cot^2\alpha = \frac{1}{\sin^2\alpha} = OB^2 \qquad OB = \frac{1}{\sin\alpha}$

$x^2+y^2 = 1 = OA^2 \Rightarrow OA = 1 \qquad OB - OA = AB$

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

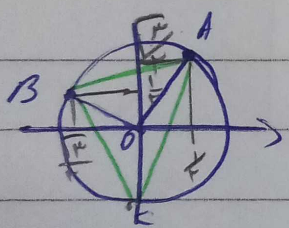
② ۲

$\frac{BD}{\sin 45} = \frac{AB}{\sin(180-\alpha)}$ ($\sin\alpha$) $\qquad \frac{CD}{\sin 30} = \frac{AC}{\sin\alpha} \Rightarrow$

$\frac{12}{\sqrt2} = \frac{AB}{\sin\alpha} \qquad \frac{3}{\frac12} = \frac{AC}{\sin\alpha}$ ۶ $\qquad \frac{\frac{AB}{\sin\alpha}}{\frac{AC}{\sin\alpha}}$

$\frac{\frac{12}{\sqrt2}}{\frac{6}{1}} = \frac{2}{\sqrt2} = \frac{AB}{AC} = \sqrt2$

③



$A\left|\begin{matrix}\frac12\\\frac{\sqrt3}{2}\end{matrix}\right. \qquad B\left|\begin{matrix}-\frac{\sqrt3}{2}\\\frac12\end{matrix}\right. \qquad C = \left|\begin{matrix}0\\-1\end{matrix}\right.$

۲

$OA = OB$ چون O روی عمود منصف قرار دارد

$A\hat{O}B = 60+30 = 90 \qquad A_1 = B_1 = 45$

$AOC = 60+90 = 150 \qquad A_2 = C_1 = 15$

$A = 60 \qquad BOC = 30+90 = 120 \qquad B_2 = C_2 = 30$

$S_{ABC} = \frac12 \sin 60 \times AB \times AC$

$AB = \sqrt{(\frac12+\frac{\sqrt3}{2})^2+(\frac{\sqrt3}{2}-\frac12)^2} = \sqrt{\frac14+\frac34+\frac{\sqrt3}{2}+\frac34+\frac14-\frac{\sqrt3}{2}} = \sqrt2$

$AC = \sqrt{(\frac12-0)^2+(\frac{\sqrt3}{2}+1)^2} = \sqrt{\frac14+\frac34+1+\sqrt3} = \sqrt{2+\sqrt3}$

$S_{ABC} = \frac12 \times \frac{\sqrt3}{2} \times \sqrt2 \times \sqrt{2+\sqrt3}$

$BC = \sqrt{(\frac{\sqrt3}{2})^2+(\frac12+1)^2} = \sqrt{\frac34+\frac94} = \frac{2\sqrt3}{2}$

$P_{ABC} = AC + AB + BC \qquad \sqrt2+\sqrt3+\sqrt{2+\sqrt3}$

$S_{ABC} = \frac{1}{2} \times AB \times AC \times \sin\frac{\pi}{6} = \frac{1}{4} \times \log_2^{27} \times \log_3^{16}$

سوال ۴

page:($= \frac{1}{4} \times 3\log_2^3 \times 4\log_3^2 = 3\log_2^3 \times \log_3^2 = 3$ Subject: Year: Month: Day: ( )

$S_{ABC} = \frac{1}{2}\sin 30 \times AB . AC$ ۱ ۴

$S_{ABC} = \frac{1}{2} \times \frac{1}{2} \log_2^{27} \times \log_3^{16} = \frac{1}{4} \times 3 \frac{1}{\log_3^2} \times 4\log_3^2$

$S_{ABC} = 3$

$\cos\alpha = x \quad x^2 = \cos^2\alpha \quad 1-\cos^2\alpha = \sin^2\alpha$ ۵

$2\sin^2\alpha - 1 \quad 2\sin^2 - 1 = -\cos^2\alpha \quad 1 - x^2 = \sin^2\alpha$ ۲

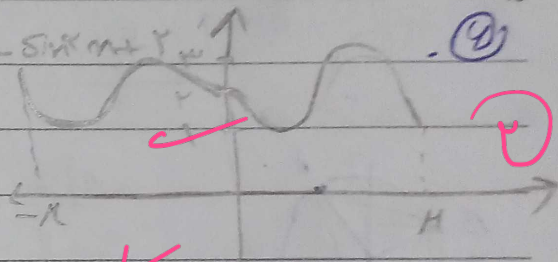
$2x^4 - x^2 - (1-x^2)(-x^2) = 2x^4 - x^2 + (x^2)(1-x^2)$

$2x^4 - x^2 + x^2 - x^4 = x^4 = 1 \quad x = \pm 1 \quad 1 = \cos^2\alpha$

$2\sin\alpha\cos\alpha = \sin 2\alpha = 0 \quad \sin\alpha = 0 \quad \cos\alpha = \pm 1$

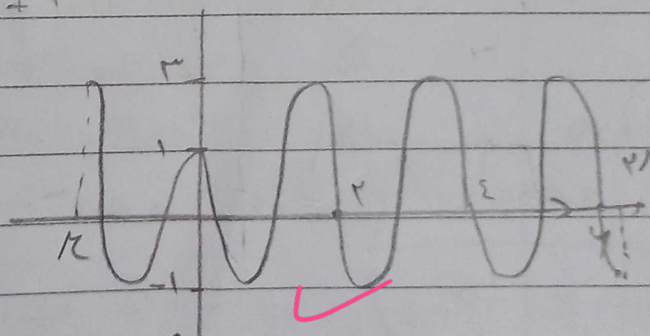
الف) $y = -2\sin x\cos x + 2 = y = -\sin 2x + 2$ ۶

~~دوره تناوب~~ $T = \frac{2\pi}{|b|} = \frac{2\pi}{2} = \pi$ ۲



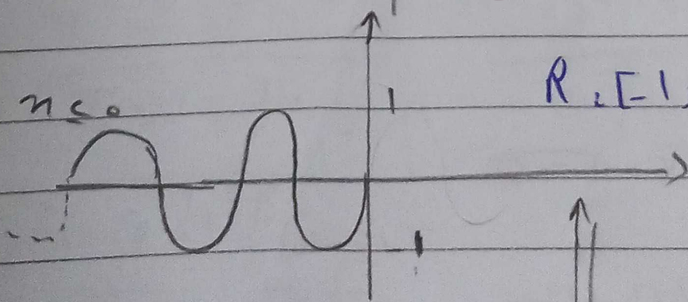
ب) $y = 2\cos(\pi x + \frac{\pi}{2}) + 1 \quad T = \frac{2\pi}{\pi} = 2$

$y = -2\sin(\pi x) + 1$

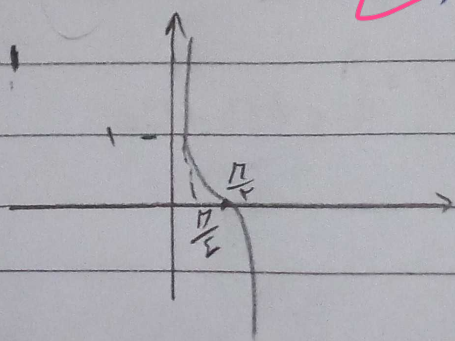


$R = [-1, 1] \cup (1, +\infty)$ ۷

$\sin x \quad x \leq 0$



$R = [-1, +\infty)$ ۲



$\cot x \quad 0 < x < \frac{\pi}{4}$

Subject: (۲۰) سؤال‌نامه ✓

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$f(x) = a + b \sin(cx)\cos(cx)\cos(2cx)$ (۸)

$f(x) = a + b\frac{1}{2}\sin(2cx)\cos(2cx) = a + b\frac{1}{4}\sin(4cx)$ (۱/۵)

$T = \frac{\pi}{2} - \frac{\pi}{10} = \frac{5\pi - \pi}{10} = \frac{4\pi}{10} = \frac{2\pi}{5}$

$T = \frac{2\pi}{|b|} \Rightarrow T = \frac{2\pi}{|4c|} = \frac{2\pi}{5}$ $5 = |4c| \Rightarrow$ ~~$c = \frac{5}{4}$~~ $\frac{5}{4}$

$c = \pm\frac{5}{4}$

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

$b = \pm 8$

$\frac{8 \times \frac{5}{4}}{2} = (5)$ $\frac{-8 \times \frac{4}{5}}{2} = -3/2$ ~~$b = -8$~~ $b = 8$

$T = \pi$ $\frac{2\pi}{|b|} = \pi$ $b = \pm 2$ $b = 2$ (۹)

$|a| + c = 2$
$-|a| + c = -4$ $c = -1$ $|a| = 3$ $a = \pm 3$ (۱)

$a = -3$

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

$2x = \frac{5\pi}{2} \Rightarrow x = \frac{5\pi}{4} = \alpha$ صورت باید صفر گردد

$|\tan 2\alpha| = 0$

$f(x) = \begin{cases} 2x + 2 & -1 \le x < 0 \\ -\frac{1}{2}x + 1 & 0 \le x < 2 \end{cases}$ (۱۰)

(۱)

$x = 34/5$ $-33 < 34/5 < 34$

$f(34/5) = 2 \times 34/5 + 2 = 71$

$f(-34/5) = f(-34 + 1/5) = f(2(-17) + 1/5) = f(1/5)$

$f(x) = \begin{cases} -\frac{1}{2}x + 1 & ; 0 \le x \le 2 \\ 2x + 2 & ; -1 \le x < 0 \end{cases}$ $\rightarrow f(1/5) = -\frac{1}{2}(\frac{3}{2}) + 1 = \frac{1}{4}$

PAYCO

سوال ۸

$\sin\theta\cos\theta\cos 2\theta = \frac{1}{2}\sin 2\theta\cos 2\theta = \frac{1}{4}\sin 4\theta$

$\frac{1}{2}\sin 2\theta$

$a+\frac{b}{4}\sin 4\theta \rightarrow T=\frac{2\pi}{10} \rightarrow \frac{2\pi}{|4b|}=\frac{2\pi}{5} \rightarrow b=\pm 2$ (cos)

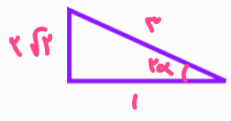
$\begin{cases} a+\frac{b}{4}=3 \\ a-\frac{b}{4}=0 \end{cases} \rightarrow a=2,\ b=1 \rightarrow \frac{bc}{a}=\omega$

سوال ۹

$\frac{2\pi}{|b|}=2 \rightarrow b=\pm 2$ — مثبت و منفی بودن مهم نیست $\rightarrow b=2$

$f(0)=-3,\ f(\frac{\pi}{2})=-3 \rightarrow \begin{matrix} a+c=-3 \\ -a+c=2 \end{matrix} \rightarrow \begin{matrix} c=-1 \\ a=-2 \end{matrix}$

$f(2\alpha)=0 \rightarrow -2\cos 2\alpha - 1 = 0 \rightarrow \cos 2\alpha = -\frac{1}{2}$



$\rightarrow |\tan 2\alpha| = 2\sqrt{2}$