آیلا نامداری
دوازدهم ریاضی BC
تکلیف ۱۴

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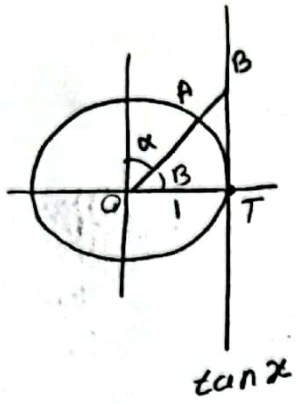

$B + \alpha = 90$

$\tan(\frac{\pi}{2} - \alpha) = \cot\alpha = BT$

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

$\cot^2\alpha + 1 = OB^2$ $\quad \sqrt{\cot^2\alpha + 1} \to \frac{1}{\sin^2}$ $\quad \frac{1}{|\sin\alpha|} = OB$

$OB - 1 = AB$

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

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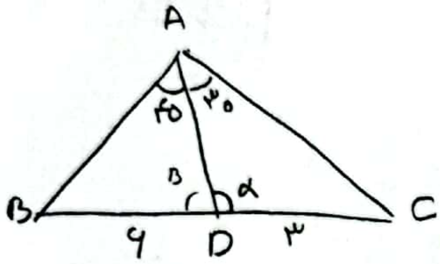

$\frac{AB}{AC} = \frac{\frac{4\sin B \times 2}{\sqrt{2}}}{3\sin B \times 2} = \frac{1 \times 2}{4\sqrt{2}} = \frac{2\sqrt{2}}{2} = \boxed{\sqrt{2}}$

$\frac{x}{\sin\alpha} = \frac{3}{\frac{1}{2}}$ $\quad 3\sin\alpha \times 2 \to AC$

$\sin\alpha = \sin B$

$\frac{x}{\sin B} = \frac{6}{\frac{\sqrt{2}}{2}}$ $\quad \frac{4\sin B \times 2}{\sqrt{2}} \to AB$

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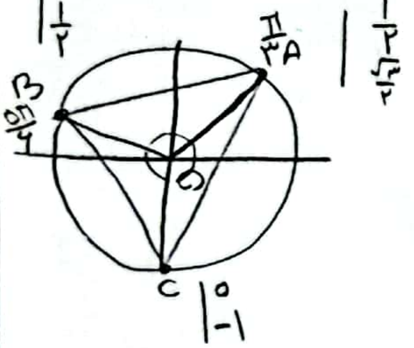

$\frac{1}{2}\sin 120 \times OB \times OC = \frac{\sqrt{3}}{4}$ $\quad \frac{1}{2}\sin 150 \times OC \times OA = \frac{1}{4}$

$\frac{1}{2}\sin 90 \times OA \times OB = \frac{1}{2}$

الف) مساحت

$\frac{1}{4} + \frac{1}{2} + \frac{\sqrt{3}}{4} = \frac{3 + \sqrt{3}}{4}$

ب) محیط

$AC = \sqrt{(\frac{1}{2})^2 + (\frac{\sqrt{3}+2}{2})^2}$ $\quad \sqrt{2 + \sqrt{3}}$

$AB = \sqrt{(\frac{1}{2} + \frac{\sqrt{3}}{2})^2 + (\frac{\sqrt{3}}{2} - \frac{1}{2})^2}$ $\quad \frac{1 + 3 + 2\sqrt{3}}{4} + \frac{3 + 1 - 2\sqrt{3}}{4} = \sqrt{2}$

$BC = \sqrt{(-\frac{\sqrt{3}}{2})^2 + (-\frac{3}{2})^2} = \sqrt{3}$

$\sqrt{3} + \sqrt{2} + \sqrt{2 + \sqrt{3}}$

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$AC = \log_3 14$

$AB = \log_2 27$

$\frac{1}{2} \times \log_2 27 \times \log_3 14 \times \frac{1}{2}$

$\frac{\log 27}{\log 2} = \frac{3\log 3}{\log 2} \times \frac{4\log 2}{\log 3} = \frac{12}{4} = 3$

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

$\cos^2(2\cos^2 - 1) + \sin^2(-2\sin^2 + 1)$
$\cos 2x \qquad \cos 2x$

$\cos 2x(\cos^2 + \sin^2) = 1 \quad \cos 2x = 1$

$\sin 2x = 0$

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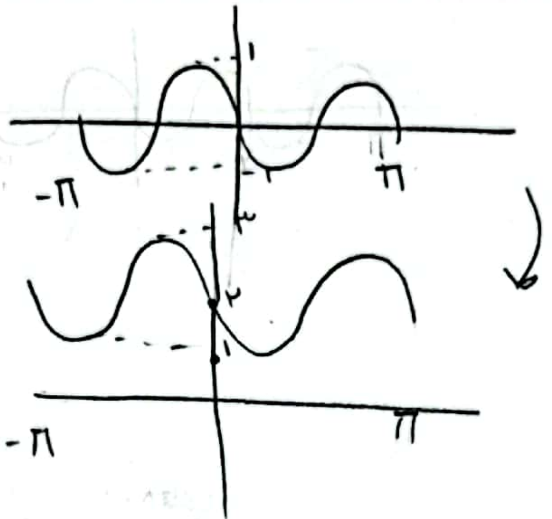
الف) $-2\sin x\cos x + 2$

$-\sin 2x + 2$

دوره تناوب $\boxed{\frac{2\pi}{2} = \pi}$

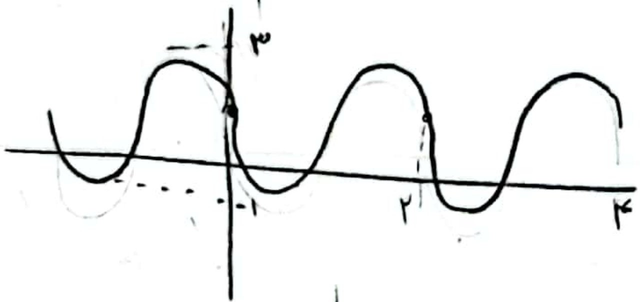


ب) $2\cos(\pi x + \frac{\pi}{2}) + 1$

$-2\sin \pi x + 1$

$|-2| + 1 = 3$ max $\boxed{\frac{2\pi}{\pi} = 2}$

$-|-2| + 1 = -1$ min



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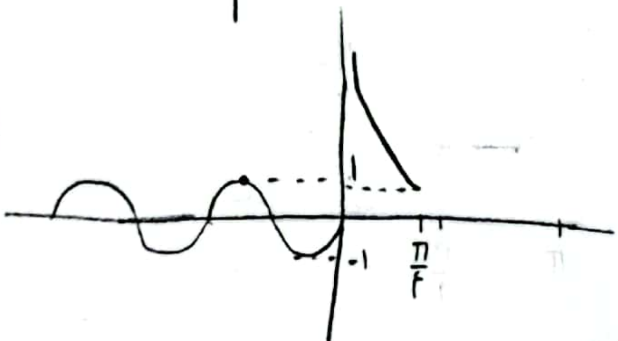
$$f(x) = \begin{cases} \cot x & 0 < x < \frac{\pi}{4} \\ \sin x & x \leq 0 \end{cases}$$



برد $= [-1, +\infty)$

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$a + b\,\underbrace{\sin(cx)\cos(cx)}\cos(2cx)$ $\quad c > 0$

$a + \frac{b}{2}\sin(2cx)\cos(2cx)$

$\frac{b}{4}\sin(4cx) + a$

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

$\frac{2\pi}{4c} = \frac{2\pi}{5}$ $\quad c = \frac{5}{4}$ $\quad \frac{\cancel{4}^{2} \times \frac{5}{\cancel{4}}}{2} = \boxed{5}$

$|\frac{b}{4}| + a = 4$

$-|\frac{b}{4}| + a = 0$

$2a = 4$

$a = 2$

$|\frac{b}{4}| = 2$ $\quad b = \pm 8 \rightarrow$ +قابل قبول

$b\sin(\cancel{5} \times \frac{\pi}{10}) + 2 = 4$ (1)

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

تناوب $= \pi$ $\quad \frac{2\pi}{b} = \pi$ $\quad b = \pm 2$ $\quad b > 0$

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

$|a| + c = 2$ $\quad 2c = -2$ $\quad \boxed{c = -1}$

$-|a| + c = -4$

$-3\cos 2x - 1 = 0$ $\quad \cos 2x = -\frac{1}{3}$ (مثلث با اضلاع 3، 1، $\sqrt{8}$)

$|a| = 3$ صعودی مطلق $a < 0$

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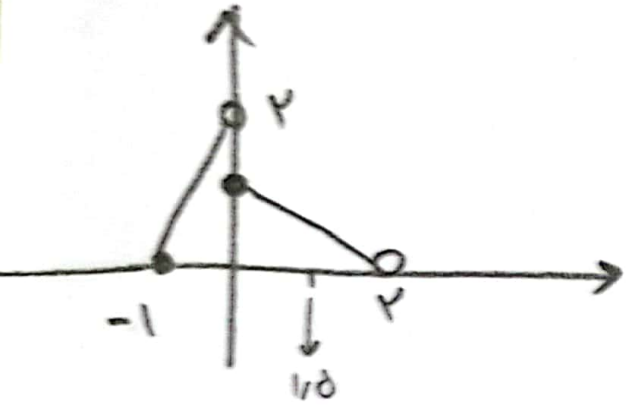

$f(-3^{4.5})$

$\begin{vmatrix} -1 & 0 \\ 0 & 2 \end{vmatrix}$

$2x+2$

$f\left(-3^{4-\frac{1}{2}}\right)$

$\begin{vmatrix} 0 & 2 \\ 1 & 0 \end{vmatrix}$

$\frac{-1}{2}x+1$

$-\frac{1}{2}\times\frac{3}{2}+1$

$-\frac{3}{4}+\frac{4}{4}=\frac{1}{4}$