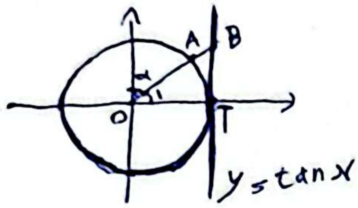
نام و نام خانوادگی ......جانان آوندکاری........ پاسخنامه تشریحی تکلیف شماره ...۱۴... کلاس .دوازدهم ریاضی B.......



$$AB = OB - \underbrace{OA}_{1}$$

$$OB = \sqrt{\underbrace{OT}_{1}^2 + BT^2}$$

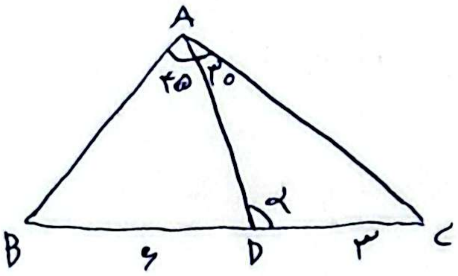
$$BT = \tan \hat{O}_1 = \cot\alpha \qquad \hat{\alpha} + \hat{O}_1 = 90^\circ$$

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

$$\frac{\cos^2\alpha}{\sin^2\alpha} + 1 = \frac{\overbrace{\cos^2\alpha + \sin^2\alpha}^{1}}{\sin^2\alpha}$$

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

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

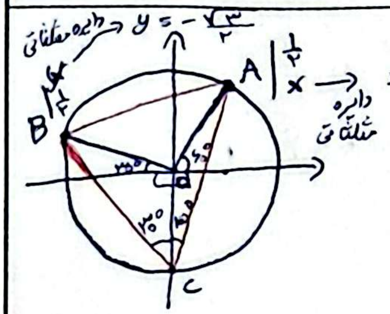


$$\frac{AC}{\sin\alpha} = \frac{3}{\underbrace{\cancel{\sin 30^\circ}}_{\frac{1}{2}}} \rightarrow AC = 6\sin\alpha$$

$$\frac{AB}{\underbrace{\cancel{\sin(\pi-\alpha)}}_{\sin\alpha}} = \frac{6}{\underbrace{\cancel{\sin 45^\circ}}_{\frac{\sqrt{2}}{2}}} \rightarrow AB = \frac{12}{\sqrt{2}}\sin\alpha$$

$$\frac{AB}{AC} = \frac{\frac{12}{\sqrt{2}}\sin\alpha}{6\sin\alpha}$$

$$\frac{AB}{AC} = \frac{2}{\sqrt{2}} = \sqrt{2}$$ ۲



$$A \left| \begin{matrix} \frac{1}{2} \\ x \end{matrix} \right. \rightarrow x = \frac{\sqrt{3}}{2}$$ دایره مثلثاتی

$$AB = \sqrt{\underbrace{\left(\frac{1}{2}+\frac{\sqrt{3}}{2}\right)^2}_{1+\frac{\sqrt{3}}{2}} + \underbrace{\left(\frac{\sqrt{3}}{2}-\frac{1}{2}\right)^2}_{1-\frac{\sqrt{3}}{2}}} = \sqrt{2}$$

$$AC = \sqrt{\underbrace{\left(\frac{1}{2}-0\right)^2}_{\frac{1}{4}} + \underbrace{\left(\frac{\sqrt{3}}{2}+1\right)^2}_{\frac{7}{4}+\sqrt{3}}} = \sqrt{2+\sqrt{3}}$$

$$BC = \sqrt{\underbrace{\left(0+\frac{\sqrt{3}}{2}\right)^2}_{\frac{3}{4}} + \underbrace{\left(-1-\frac{1}{2}\right)^2}_{\frac{9}{4}}} = \sqrt{3}$$

(الف)

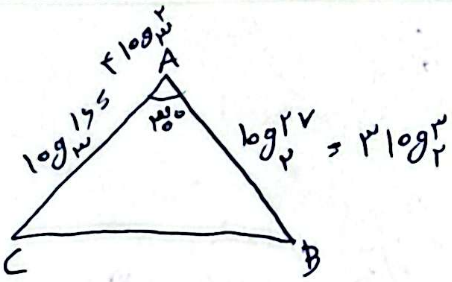
$$S_{ABC} = \frac{AC \cdot BC \cdot \sin 45}{2}$$

$$\frac{\sqrt{2+\sqrt{3}} \cdot \sqrt{3} \cdot \sqrt{2}}{4} = \frac{\sqrt{3}\sqrt{2}+2\sqrt{6}}{4}$$ ۳

(ب)

$$P_{ABC} = AB + AC + BC$$

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



$$S_{ABC} = \frac{AB \cdot AC \cdot \sin\hat{A}}{2} \rightarrow \frac{3\log_2 3 \times 4\log_3 2 \times \sin 30^\circ}{2} = 3$$

$$S_{ABC} = 3$$ ۴

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

$$x = \cos\alpha \rightarrow 2\cos^4\alpha - \cos^2\alpha + \sin^2(\alpha)\,(\underbrace{\cancel{2\sin^2\alpha - 1}}_{-\cos 2\alpha})$$

$$\underbrace{\cos^2\alpha(2\cos^2\alpha - 1)}_{\cos^2\alpha\,\cos 2\alpha}$$

$$\cos 2\alpha\,(\underbrace{\cos^2\alpha + \sin^2\alpha}_{1}) = 1 \rightarrow \cos 2\alpha = 1$$ ۵

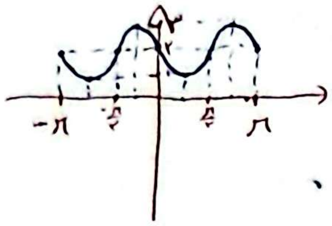
1

$$\sin 2\alpha = 0$$

الف) $y = -2\sin x\cos x + 2 \quad [-\pi, \pi]$

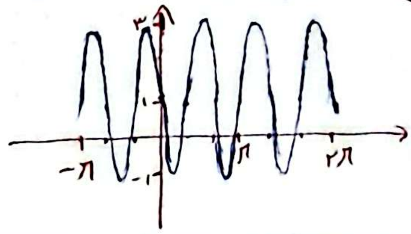
$\downarrow$

$y = -\sin 2x + 2 \rightarrow$ دوره تناوب $= \frac{2\pi}{2} = \pi$

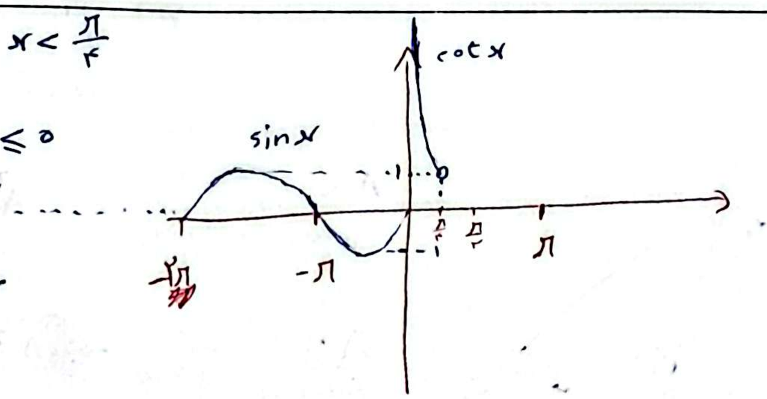


ب) $y = 2\cos\underbrace{(x+\frac{1}{2})\pi}_{(x\pi + \frac{\pi}{2})} + 1 \quad [-\pi, 2\pi]$

$y = -2\sin(x\pi) + 1 \rightarrow$ دوره تناوب $= \frac{2\pi}{\pi} = 2$ ۶



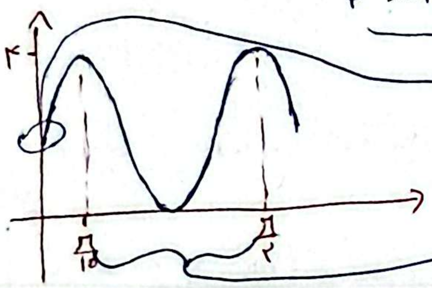
$$f(x) = \begin{cases} \cot x & ; 0 < x < \frac{\pi}{4} \\ \sin x & ; x \leq 0 \end{cases}$$



$R \in [-1, +\infty)$ ۷

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

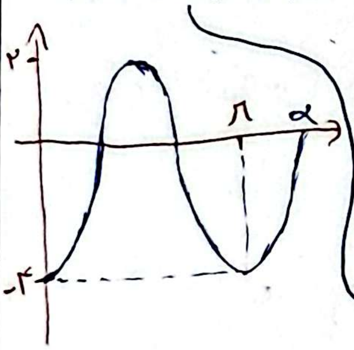
$\frac{bc}{a} = \frac{8 \times \frac{5}{4}}{2} = 5 = \frac{bc}{a}$



$\frac{b}{4} = \pm 2 \xrightarrow{c>0} \frac{b}{4} = 2 \rightarrow b = 8 \rightarrow a = 2$ ۸

دوره تناوب $= \frac{2\pi}{|4c|} = \frac{4\pi}{10} \rightarrow c = \pm\frac{5}{4} \xrightarrow{c>0} c = +\frac{5}{4}$

$f(x) = a\cos bx + c \rightarrow c = -1$



$\frac{2\pi}{|b|} = \pi \rightarrow b = \pm 2 \rightarrow$ چون تابع کسینوسی است فرقی نمی‌کند $\rightarrow b = 2$

$a = -3$

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

$x = \alpha \rightarrow -3\cos 2\alpha - 1 = 0$ ۹

$\cos 2\alpha = -\frac{1}{3}$

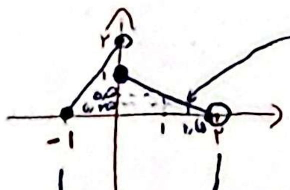
$1 + \tan^2 2\alpha = \frac{1}{\cos^2 2\alpha} = 9 \rightarrow \tan^2 2\alpha = 8$

$\tan 2\alpha = \pm 2\sqrt{2}$

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

$f(x) = y$ دوره تناوب : ۳

$f(1/5) = f(-34/5) = 0/25$



$= 3n - 1 = -34 \rightarrow f(-34) = f(2) \rightarrow f(-34/5) = f(1/5)$ ۱۰