

Date:

14

Sub:

مکعب

بہ اخذ

امریکی نوٹس

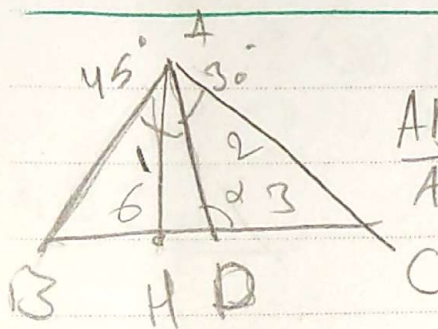
دعاۃ ہر

$$BT = \tan\left(\frac{\pi}{2} - \alpha\right) \Rightarrow BT = \cot \alpha \quad (1)$$

$$\Rightarrow OB^2 = OT^2 + BT^2 \Rightarrow OB^2 = \cot^2 \alpha + 1^2$$

$$\Rightarrow OB^2 = \frac{1}{\sin^2 \alpha} \Rightarrow \boxed{OB = \frac{1}{\sin \alpha}}$$

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



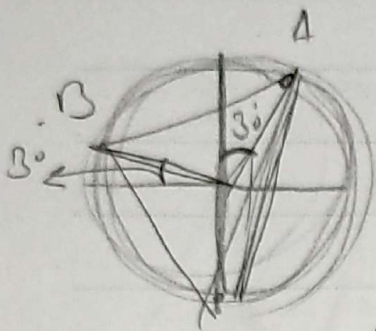
$$\frac{AB}{AC} = ?$$

$$\frac{S_1}{S_2} = \frac{6 \times AH \times \frac{1}{2}}{3 \times AH \times \frac{1}{2}} \quad (2)$$

$$\Rightarrow \boxed{\frac{S_1}{S_2} = 2}, \quad \frac{S_1}{S_2} = \frac{AD \times AB \times \frac{1}{2} \times \sin 45^\circ}{AD \times AC \times \frac{1}{2} \times \sin 30^\circ}$$

$$\Rightarrow \frac{AB}{AC} \times \frac{\frac{\sqrt{2}}{2}}{\frac{1}{2}} \Rightarrow \boxed{\frac{AB\sqrt{2}}{AC} = 2} \Rightarrow \frac{AB}{AC} = \sqrt{2}$$

(3)



الف) مساحت مثلث ABC، اريد اوريد.

$$S_{ABC} = S_{AOB} + S_{AOC} + S_{BOC}$$

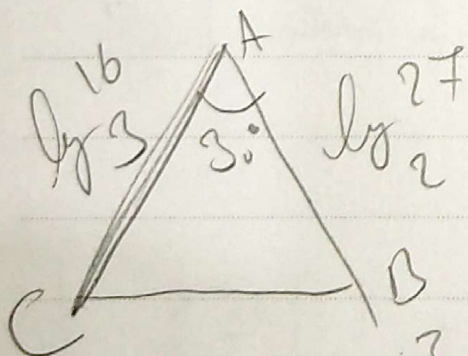
$$\Rightarrow S_{ABC} = \frac{1 \times 1}{2} \times \sin 70^\circ + \frac{1 \times 1}{2} \times \sin 150^\circ + \sin 120^\circ \times \frac{1}{2}$$

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

ب) محيط مثلث ABC، اريد اوريد.

$$\frac{P}{2} = a + b + c \Rightarrow \sqrt{\left(\frac{\sqrt{3}}{2}\right)^2 + \left(\frac{3}{2}\right)^2} + \sqrt{\left(\frac{2+\sqrt{3}}{2}\right)^2 + \left(\frac{1}{2}\right)^2} + \sqrt{\left(\frac{\sqrt{3}-1}{2}\right)^2 + \left(\frac{\sqrt{3}+1}{2}\right)^2}$$

$$= \sqrt{\frac{12}{4}} + \sqrt{\frac{8+4\sqrt{3}}{4}} + \sqrt{\frac{8}{4}} = \sqrt{3} + \sqrt{2+\sqrt{3}} + \sqrt{2}$$



$$S = \frac{1}{2} \times 16 \times 3 \times \sin 30^\circ = \frac{1}{2} \times 24 \times \frac{1}{2} = 6$$

$$\frac{1}{2} \times \frac{1}{2} \times \frac{27}{\sin 30^\circ} \times \frac{16}{\sin 27^\circ} = 3$$

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$$\sin^2 - \cos^2$$

$$m^4 - m^2 - \sin^2 \alpha (2\sin^2 \alpha - 1)$$

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$$2m^4 - m^2 + \sin^2 \alpha \cos 2\alpha \quad m = \cos \alpha$$

$$\Rightarrow m = \cos \alpha \Rightarrow 2 \cos^4 \alpha - \cos^2 \alpha + \sin^2 \alpha \cos 2\alpha$$

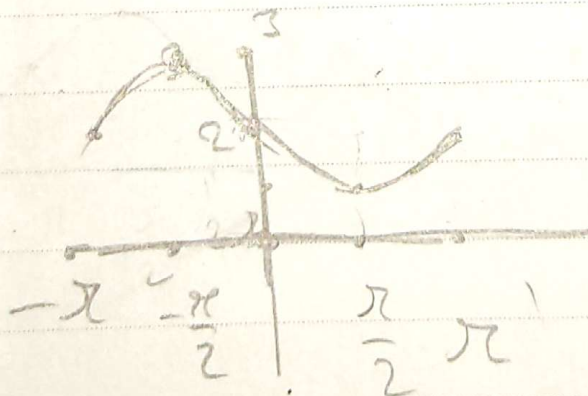
$$\cos^2 \alpha (2 \cos^2 \alpha - 1) + \sin^2 \alpha \cos 2\alpha$$

$$\cos 2\alpha$$

$$\Rightarrow \cos 2\alpha (\cos^2 \alpha + \sin^2 \alpha) = 1 \Rightarrow \cos 2\alpha = 1$$

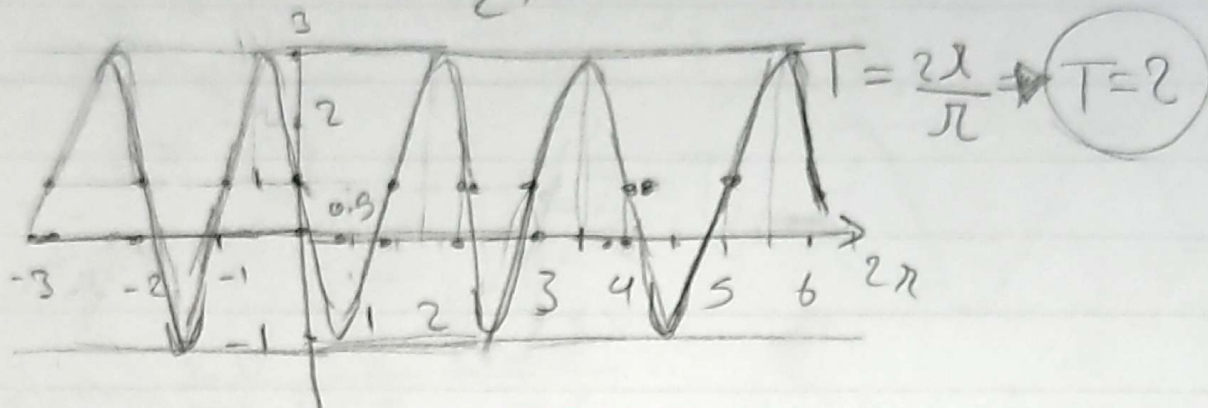
$$\Rightarrow \sin 2\alpha = 0$$

$$y = -2 \sin \alpha \cos \alpha + 2 \Rightarrow y = -\sin 2\alpha + 2 \Rightarrow T = \frac{2\pi}{2} = \pi$$



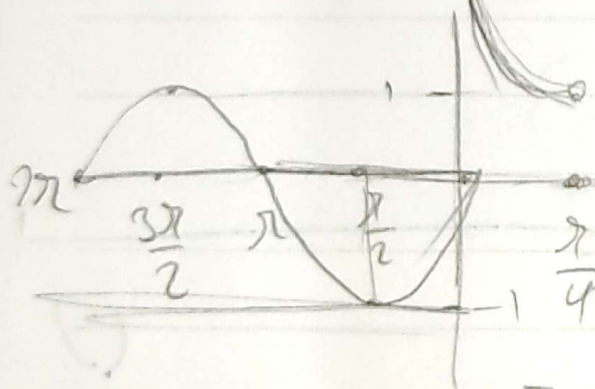
$$\rightarrow y = 2 \cos \left(n + \frac{1}{2} \right) \pi + 1$$

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



$$f(x) = \begin{cases} \cos 2x & ; 0 < x < \frac{\pi}{4} \\ \sin x & ; x < 0 \end{cases}$$

(7)



این شکل سری برده

و ما که این را می بینیم

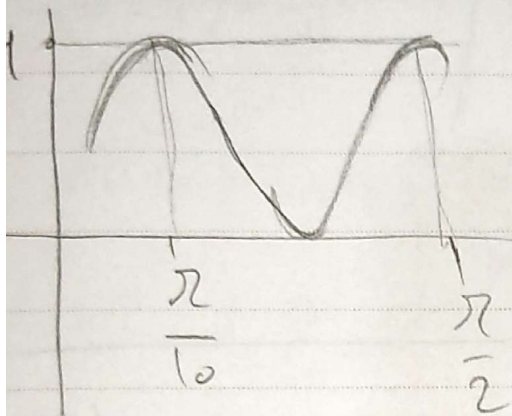
در این سری می بینیم

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

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

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$$\Rightarrow f(x) = a + \frac{b}{4} \sin(4cx) \Rightarrow T = \frac{2\pi}{4c} = \frac{\pi}{2c}$$



$$T = \frac{\pi}{2} - \frac{\pi}{10} \quad b \left(\frac{1}{10} \right) \quad \frac{1}{10}$$

$$= \frac{4\pi}{10} \Rightarrow \frac{\pi}{2c} = \frac{4\pi}{10} \Rightarrow c = \frac{5}{4}$$

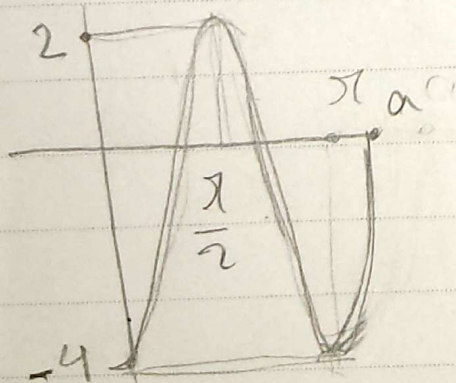
$$\frac{b}{4} + a = 4$$

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

$$\Rightarrow 2a = 4 \Rightarrow a = 2 \Rightarrow \frac{b}{4} = 2 \Rightarrow b = 8$$

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

$$f(x) = a \cos bx + c \quad \rightarrow \quad |\ln 2a| = 2\sqrt{2} \quad (9)$$



$$T = \pi \Rightarrow \frac{2\pi}{b} = \pi \Rightarrow b = 2$$

$$x = 0 \Rightarrow a + c = -4$$

$$x = \frac{\pi}{2} \Rightarrow -a + c = 2$$

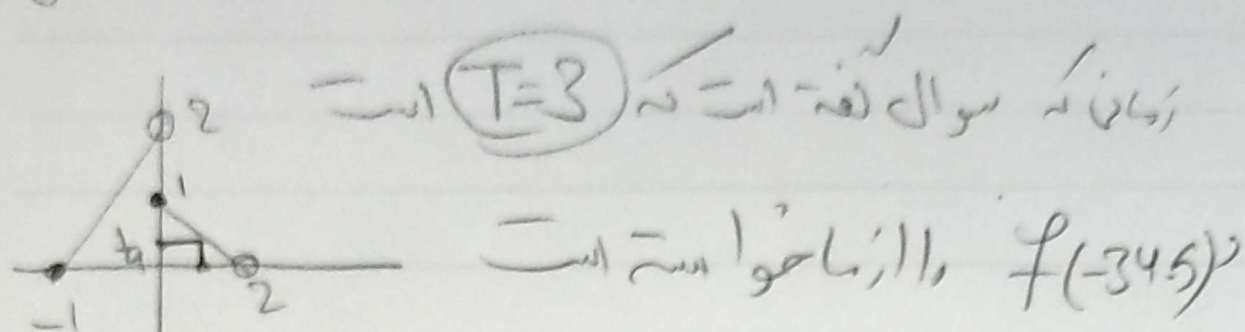
$$\Rightarrow c = -1$$

$$a = -3$$

$$-3 \cos 2x - 1 = 0 \Rightarrow \cos 2x = -\frac{1}{3} \Rightarrow \sin 2x = \sqrt{1 - \left(-\frac{1}{3}\right)^2} = \frac{2\sqrt{2}}{3}$$

$$y = f(x)$$

(10)



پس ما باید -34.5 را با 36 جمع کنیم تا جای دقیق آن را

بر روی شکل اولیماان نفهمیم

$$-34.5 + 36 = 1.5$$

در نقطه 1.5 شیب ما $\frac{1}{2}$ بوده است پس

$$f(-34.5) = f(1.5) = \frac{1}{2}x + 1 = -\frac{3}{4} + 1 = \frac{1}{4}$$