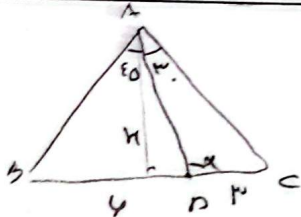


$$\cos \alpha_1 = \frac{OT}{OB} = \frac{1}{1+AB} \quad \alpha_1 + \alpha = \frac{\pi}{2}$$

$$\cos(\alpha_1) = \sin \alpha, \quad \frac{1}{1+AB} \rightarrow \sin \alpha + \sin \alpha \cdot AB = 1$$

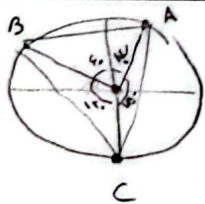
$$y = \tan \alpha \rightarrow \frac{1 - \sin \alpha}{\sin \alpha} \quad \checkmark AB$$



$$\frac{S_{ABD}}{S_{ADC}} = \frac{\frac{1}{2} \times h \times 4}{\frac{1}{2} \times h \times 3} = 2$$

$$\frac{S_{ABD}}{S_{ADC}} = \frac{\frac{1}{2} \times AB \times AD \times \sin \alpha}{\frac{1}{2} \times AD \times AC \times \sin \alpha} = 2 \rightarrow \frac{AB \times \frac{r}{2}}{AC \times \frac{1}{2}} = 2$$

$$\frac{AB}{AC} = \sqrt{2} \quad \checkmark$$



$$A = \left(\frac{1}{r}, \frac{r}{r}\right) \rightarrow A = 45^\circ$$

$$B = \left(-\frac{r}{r}, \frac{1}{r}\right) \rightarrow B = 10^\circ$$

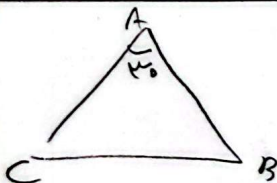
$$S_{ABC} = S_{AOB} + S_{BOC} + S_{AOC}$$

$$= \frac{1}{2} \times 1 \times 1 \times \sin 45^\circ + \frac{1}{2} \times 1 \times 1 \times \sin 10^\circ + \frac{1}{2} \times 1 \times 1 \times \sin 10^\circ = \frac{1 + \sqrt{3}}{2}$$

$$AC^2 = OA^2 + OC^2 - 2OA \times OC \cos 110^\circ \rightarrow AC^2 = 1 + 1 - 2 \times 1 \times 1 \times \cos 110^\circ \rightarrow AC = \sqrt{2}$$

$$AB^2 = OA^2 + OB^2 - 2OA \times OB \cos 90^\circ \rightarrow AB^2 = 2 \rightarrow AB = \sqrt{2}$$

$$AC^2 = OA^2 + OC^2 - 2OA \times OC \cos 10^\circ \rightarrow AC^2 = 2 - 2 \times 1 \times 1 \times \cos 10^\circ \rightarrow AC = \sqrt{2}$$



$$AC = \sqrt{2}$$

$$AB = \sqrt{2}$$

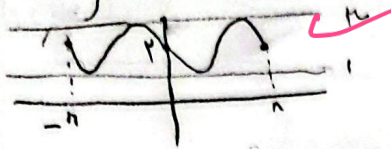
$$S = \frac{1}{2} \times AB \times AC \times \sin \alpha$$

$$\rightarrow S = \frac{1}{2} \times \sqrt{2} \times \sqrt{2} \times \sin \alpha = \frac{1}{2} \times 2 \times \sin \alpha = \sin \alpha$$

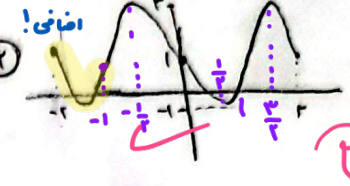
$$f(x) = \sin^2(x) (r \sin x - 1) \rightarrow f(\cos \alpha) = 1$$

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

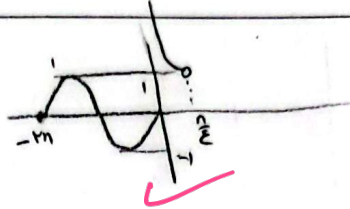
$$\cos^2 \alpha (\sin^2 \alpha + \cos^2 \alpha) = 1 \rightarrow \cos^2 \alpha = 1 \rightarrow \cos \alpha = 1 \rightarrow \sin \alpha = 0$$

$y = r \sin \alpha \cos \alpha + r \cos \alpha \sin \alpha \rightarrow y = -\sin 2\alpha + r \rightarrow T = \frac{2\pi}{\omega} = \pi$


در استقار بنای جمدی نقطه ها را محور x ها را سفید کن!

$y = r \cos(\alpha + \frac{1}{F})\eta + 1 \rightarrow T = \frac{2\pi}{\frac{1}{F}} = 2\pi F$
 $r \cos(n\alpha + \frac{\eta}{F}) + 1 = -r \sin n\alpha + 1$


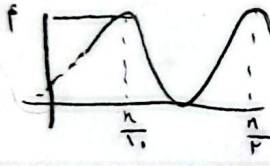
$f(\alpha) = \cot \alpha \quad \alpha \in (-\frac{\pi}{2}, \frac{\pi}{2})$
 $\sin \alpha \quad \alpha \in (-\frac{\pi}{2}, \frac{\pi}{2})$



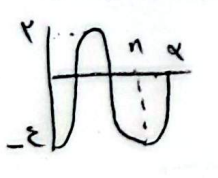
$R = [-1, +\infty)$

$f(\alpha) = a + b \sin(c\alpha) \cos(c\alpha) = a + \frac{b}{2} \sin(2c\alpha)$
 $\sin(2c\alpha)$

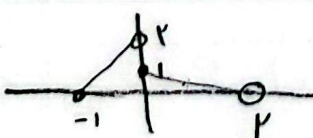
$f(\alpha) = a + \frac{b}{2} \sin(2c\alpha) \rightarrow T = \frac{2\pi}{2c} = \frac{\pi}{c} \rightarrow \frac{2\pi}{c} = \frac{\pi}{c} \rightarrow c = \frac{2\pi}{T}$


 $\max \frac{b}{2} + a = \epsilon \rightarrow a = \epsilon \rightarrow a = r$
 $\min a - \frac{b}{2} = 0 \rightarrow a = \frac{b}{2} \rightarrow b = 2a = 2r$
 $c = \frac{2\pi}{T} \rightarrow \frac{b}{a} = \frac{2r}{r} = 2 \rightarrow \frac{b}{a} = 2$

$f(\alpha) = a \cos b\alpha + c \rightarrow a \cos \alpha$


 $T = \frac{2\pi}{b} \rightarrow \frac{2\pi}{b} = \pi \rightarrow b = 2$
 $-a + c = r$
 $a + c = -\epsilon \rightarrow c = -r \rightarrow c = -1 \quad a = -r$

$f(\alpha) = -r \cos(2\alpha) - 1 \rightarrow f(\alpha) = -\cos(2\alpha) - 1$
 $\rightarrow \sin 2\alpha = \frac{1}{r}$
 $\rightarrow \tan 2\alpha = \frac{1}{r}$


 $T = \pi$
 $f(-\pi/2, 0) \rightarrow f(\alpha) = f(\alpha + nT)$
 $f(-\pi/2, 0) = f(-\pi/2, 0 + 1 \times \pi) = f(1/2, 0) \rightarrow y = -\frac{1}{r} \alpha + 1$
 $\rightarrow f(1/2, 0) = -\frac{1}{r} \times \frac{\pi}{2} + 1 = \frac{1}{r}$