

$$AB = BO - 1 \text{ و } OB = BT + 1 \text{ و } BT = \tan(\frac{\pi}{2} - \alpha) = \cot \alpha$$

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

$$\frac{S_{ABD}}{S_{ADC}} = \frac{\frac{1}{2} \times h \times BD}{\frac{1}{2} \times h \times DC} = \frac{y}{1} = \frac{\frac{1}{2} \sin 30^\circ \times AD \times AB}{\frac{1}{2} \sin 30^\circ \times AD \times AC} \Rightarrow y = \frac{\frac{1}{2} \times AB}{\frac{1}{2} \times AC}$$

$$\Rightarrow \frac{AB}{AC} = \sqrt{r}$$

$$A \rightarrow \begin{vmatrix} \frac{1}{r} \\ \frac{\sqrt{r}}{r} \\ \frac{\sqrt{r}}{r} \end{vmatrix} \quad B \rightarrow \begin{vmatrix} -\frac{\sqrt{r}}{r} \\ \frac{1}{r} \\ 0 \end{vmatrix} \quad C \rightarrow \begin{vmatrix} 0 \\ 0 \\ -1 \end{vmatrix}$$

$$S_{ABC} = \frac{1}{2} \times \begin{vmatrix} 0 & -1 \\ \frac{1}{r} & \frac{\sqrt{r}}{r} \\ -\frac{\sqrt{r}}{r} & \frac{1}{r} \end{vmatrix} = \frac{1}{2} \times \left((0 + \frac{1}{r} + \frac{\sqrt{r}}{r}) - (-\frac{1}{r} - \frac{\sqrt{r}}{r} - 0) \right) = \frac{1}{2} \times \frac{\sqrt{r} + \sqrt{r}}{r} = \frac{\sqrt{r}}{r}$$

$$AB = \sqrt{1+r} = \sqrt{r}$$

$$AC = r \times \sin 15^\circ = r \times \frac{1 - \cos 30^\circ}{2} = r \times \frac{1 - \frac{\sqrt{3}}{2}}{2} = r \times \frac{2 - \sqrt{3}}{4} = \frac{\sqrt{2+2\sqrt{3}}}{2} = \frac{\sqrt{2} + \sqrt{3}}{2}$$

$$BC = r \times \sin 11^\circ = \sqrt{r}$$

$$P = \frac{\sqrt{r} \times \sqrt{2+2\sqrt{3}}}{2}$$

$$AC \times AB \times \sin \hat{A} \times \frac{1}{2} = S_{ABC} = \frac{1}{2} \times \log^{\sqrt{r}} c \times \log^{\sqrt{r}} r \times \frac{1}{2}$$

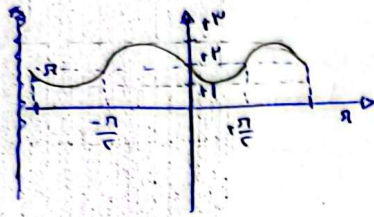
$$= \text{مساحت مثلث} = \frac{1}{2} \times \log^{\sqrt{r}} r \times \log^{\sqrt{r}} c = \frac{1}{2} \times 2 \times c = c$$

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

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

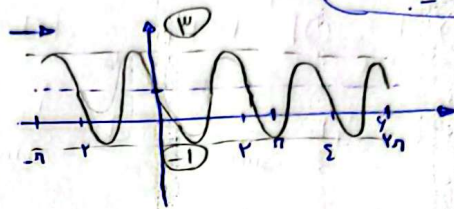
$$\Rightarrow \cos^2 \alpha = 1 \Rightarrow \sin^2 \alpha = 0$$

$$\rightarrow y = 0 - \sin 2\pi x + 2 \rightarrow T = \frac{2\pi}{2} = \pi$$



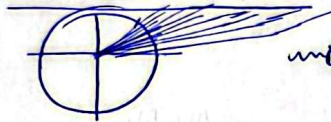
$$y = 2 \cos(\pi x + \frac{\pi}{2}) + 1 = -2 \sin(\pi x) + 1$$

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



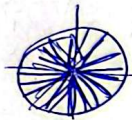
نمودار ضربی

$$\cot x, x \in (0, \frac{\pi}{2}) \rightarrow$$



از روی شکل مشخص است
 $\cot x \rightarrow x \in (0, \frac{\pi}{2})$
 $\rightarrow \cot x \in (1, +\infty)$

$$\sin x \rightarrow x \leq 0 \rightarrow$$



از روی شکل مشخص است
 $\sin x \rightarrow x \leq 0$

$$\sin x \in [-1, 1]$$

$$\rightarrow R_f = [1, +1] \cup (1, +\infty) = [1, +\infty)$$

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

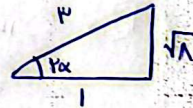
$$= a + \frac{b}{2} \sin(2cx) \rightarrow T = \frac{2\pi}{2c} = \frac{\pi}{c} \rightarrow \text{دوره} \rightarrow T = \frac{\pi}{c} - \frac{\pi}{1} = \frac{\pi}{1} = \frac{\pi}{1} = \frac{\pi}{1}$$

$$\rightarrow y = a + \frac{b}{2} \sin(2cx) \rightarrow \Sigma = a + \frac{b}{2} \sin(\frac{\pi}{2}) \rightarrow \Sigma = a + \frac{b}{2}$$

$$\frac{\Sigma - a}{\frac{b}{2}} = \frac{1 - a}{\frac{b}{2}} \rightarrow b = +1 \rightarrow \frac{bc}{a} = \frac{1 \times \frac{1}{2}}{1} = \frac{1}{2}$$

$$|a| = \frac{1 + \Sigma}{2} = 1 \rightarrow a = -1 \rightarrow \pi = \frac{2\pi}{2} \rightarrow b = 2 \rightarrow \frac{1 - \Sigma}{2} = -1 = c$$

$$\rightarrow -3 \cos 2x + 0 - 1 = y \rightarrow -3 \cos 2x = 1 \rightarrow \cos 2x = -\frac{1}{3} \rightarrow$$



$$\rightarrow |\tan 2x| = \sqrt{8}$$

$$c = \cos(0) \rightarrow f(a) = f(a+c) \rightarrow f(-\cos(0)) = f(\pi - \cos(0)) = f(1,0)$$

$$f(1,0) = -\frac{1}{2} \times 1 + 1 = -\frac{1}{2} + 1 = \frac{1}{2}$$