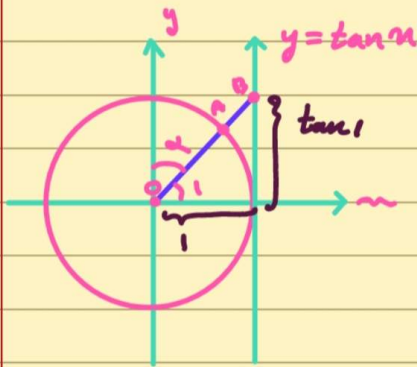


سارینا عابدینی

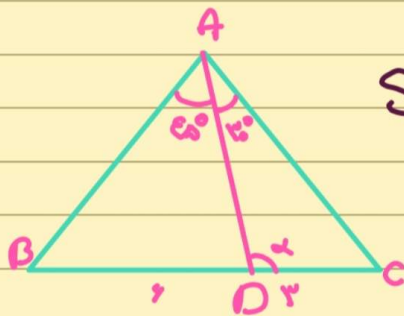


$$\alpha + 1 = \frac{\pi}{2}$$

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

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

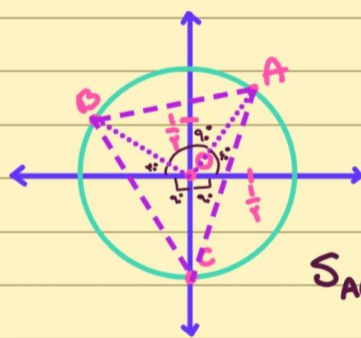
$$AB = \frac{1}{\sin \alpha} - 1$$



$$S_{\triangle ABD} = 2 S_{\triangle ACD}$$

$$\frac{1}{2} \sin 60^\circ \times AD \times AB = 2 \times \frac{1}{2} \sin 30^\circ \times AD \times AC$$

$$\frac{\sqrt{3}}{2} AB = AC \Rightarrow \frac{AB}{AC} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$$



$$C \rightarrow \hat{A} = \frac{1}{2} \Rightarrow \hat{A} = 30^\circ$$

$$\sin \hat{B} = \frac{1}{2} \Rightarrow \hat{B} = 150^\circ$$

$$S_{\triangle AOC} = \frac{1}{2} \sin (30^\circ + 30^\circ) \times 1 \times 1 = \frac{1}{4}$$

$$S_{\triangle AOB} = \frac{1}{2} \sin (150^\circ - 30^\circ) \times 1 \times 1 = \frac{1}{4}$$

$$S_{\triangle BOC} = \frac{1}{2} \sin (30^\circ + 30^\circ) \times 1 \times 1 = \frac{\sqrt{3}}{4}$$

$$S_{\triangle ABC} = \frac{1}{4} + \frac{1}{4} + \frac{\sqrt{3}}{4} = \frac{1+\sqrt{3}}{4}$$

سارینا عابدینی

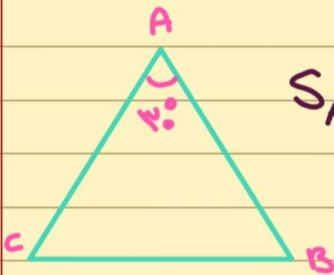
$$C = \sqrt{a^2 + b^2 - 2ab \cos C}$$

$$AC = \sqrt{1 + 1 - 2 \cos 120^\circ} = \sqrt{2 + \sqrt{3}}$$

$$AB = \sqrt{1 + 1} = \sqrt{2}$$

$$BC = \sqrt{1 + 1 - 2 \cos 120^\circ} = \sqrt{2 + \sqrt{3}}$$

$$P_{ABC} = \sqrt{2 + \sqrt{3}} + \sqrt{2} + \sqrt{2 + \sqrt{3}}$$



$$S_{ABC} = \frac{1}{2} \sin 120^\circ \times \frac{\sqrt{2}}{2} \times \frac{\sqrt{2 + \sqrt{3}}}{2}$$

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

$$f(x) = x^2 - 2x - \sin^2(x) (1 - \sin^2(x))$$

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

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

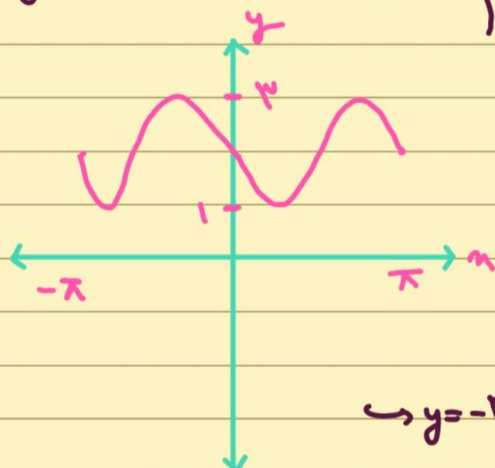
$$(\cos^2 \alpha - \sin^2 \alpha)(\cos^2 \alpha + \sin^2 \alpha)$$

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

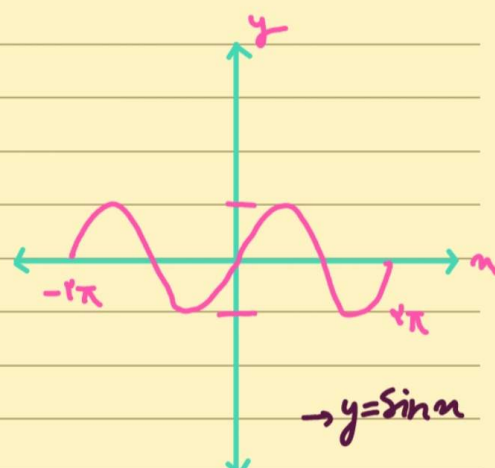
$$\sin^2 \alpha = 1 - \cos^2 \alpha = 0 \rightarrow \sin \alpha = 0$$

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

$$y = -\sin 2n + 2 \rightarrow T = \frac{2\pi}{|b|} \rightarrow T = \frac{2\pi}{2} = \pi$$



$$\hookrightarrow y = -2 \sin 2n + 2$$



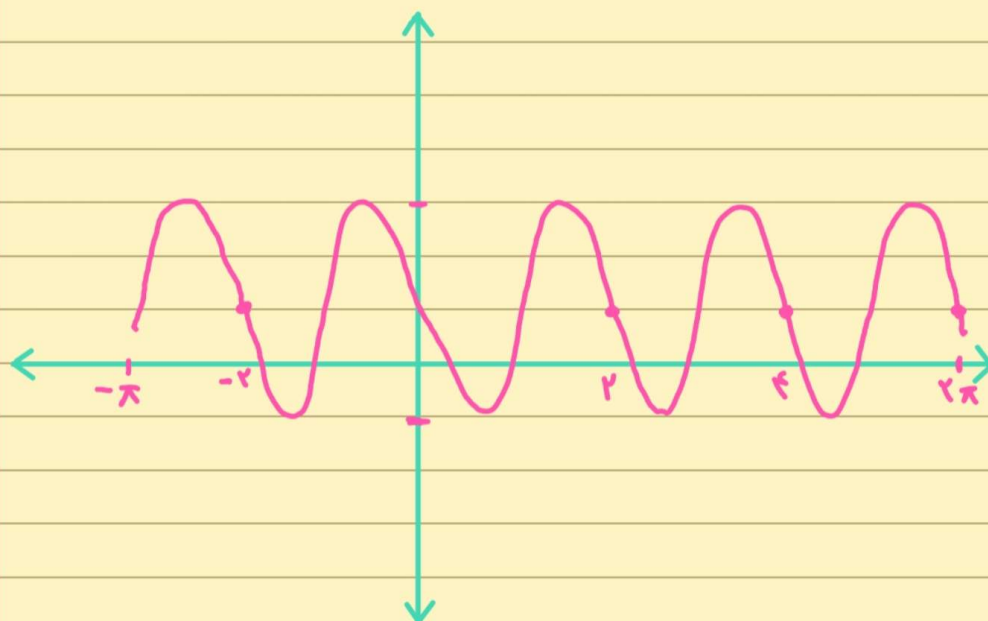
$$\hookrightarrow y = \sin n$$

ب) $y = 2 \cos(n + \frac{1}{2})\pi + 1$ $[-\pi/2, \pi/2]$

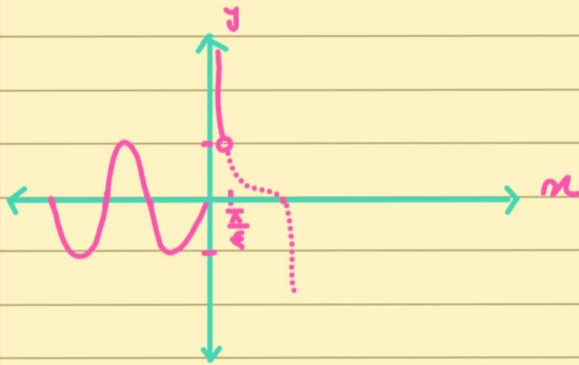
$$y = 2 \cos(\pi n + \frac{\pi}{2}) + 1$$

$$y = -2 \sin(\pi n) + 1$$

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



۷-

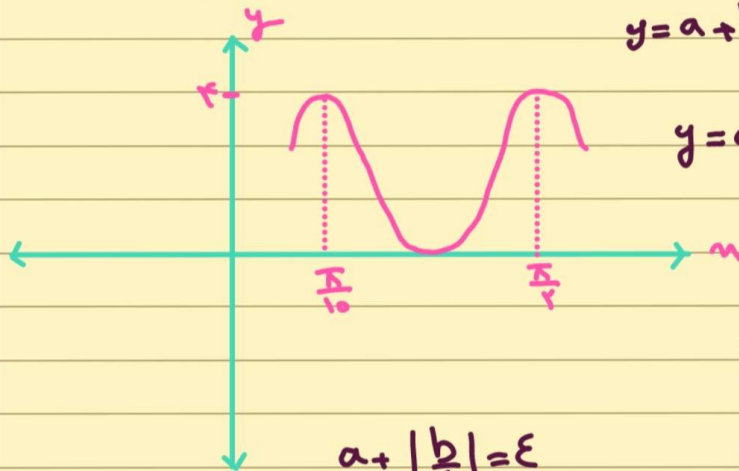


برجوابی $[-1, +\infty)$ می باشد.

۸-

$$y = a + b \sin(\omega x) \cos(\omega x) \cos(\omega x)$$

$$y = a + \frac{b}{f} \sin(f \omega x)$$



$$f \omega = \frac{2\pi}{\frac{2\pi}{\omega}} = \omega \rightarrow \omega = \frac{\omega}{f}$$

$$|b/f| = \frac{f}{f} = 1 \Rightarrow b = \pm 1$$

$$a + |b/f| = \epsilon$$

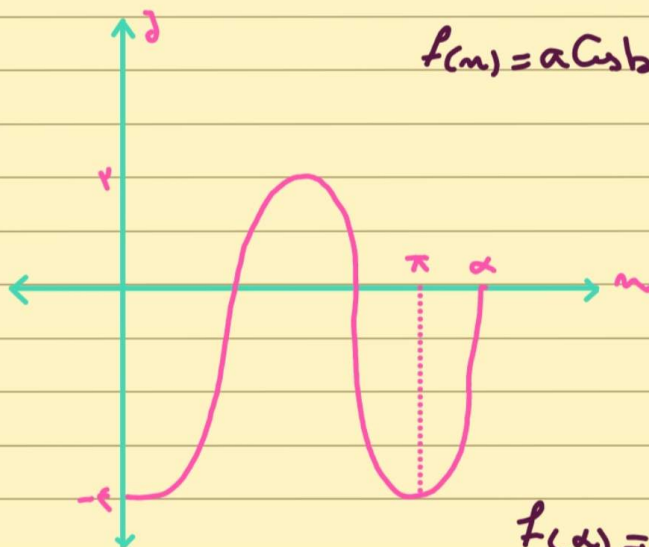
$$a + 1 = \epsilon \rightarrow a = \epsilon - 1$$

$$a + |b/f| = 0$$

$$\frac{bc}{a} = \frac{1 \times \omega}{f \times 1} = \omega$$

۹-

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



$$|b| = \frac{2\pi}{\pi} = 2$$

$$|a| = \frac{1+\epsilon}{2} = 1$$

$$\Rightarrow a = -1, c = -1$$

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

$$f(\alpha) = -1 \cos 2\alpha - 1 = 0$$

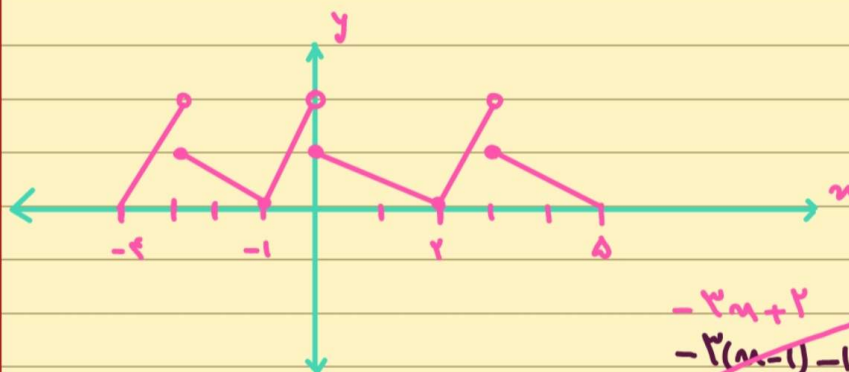
$$\cos 2\alpha = -1$$

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

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

۱۰-

اعداد در سر بازه گزیده
از تساعده $3n-1$
پیری می کنند.



$$\cancel{-3n+2} \quad -2(n-1)-1 < -34/5 < 3n-1$$

$$n = -11$$

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

$$y = \frac{1}{2} \left(\frac{1}{5} \right) + 1 = \frac{1}{10}$$

