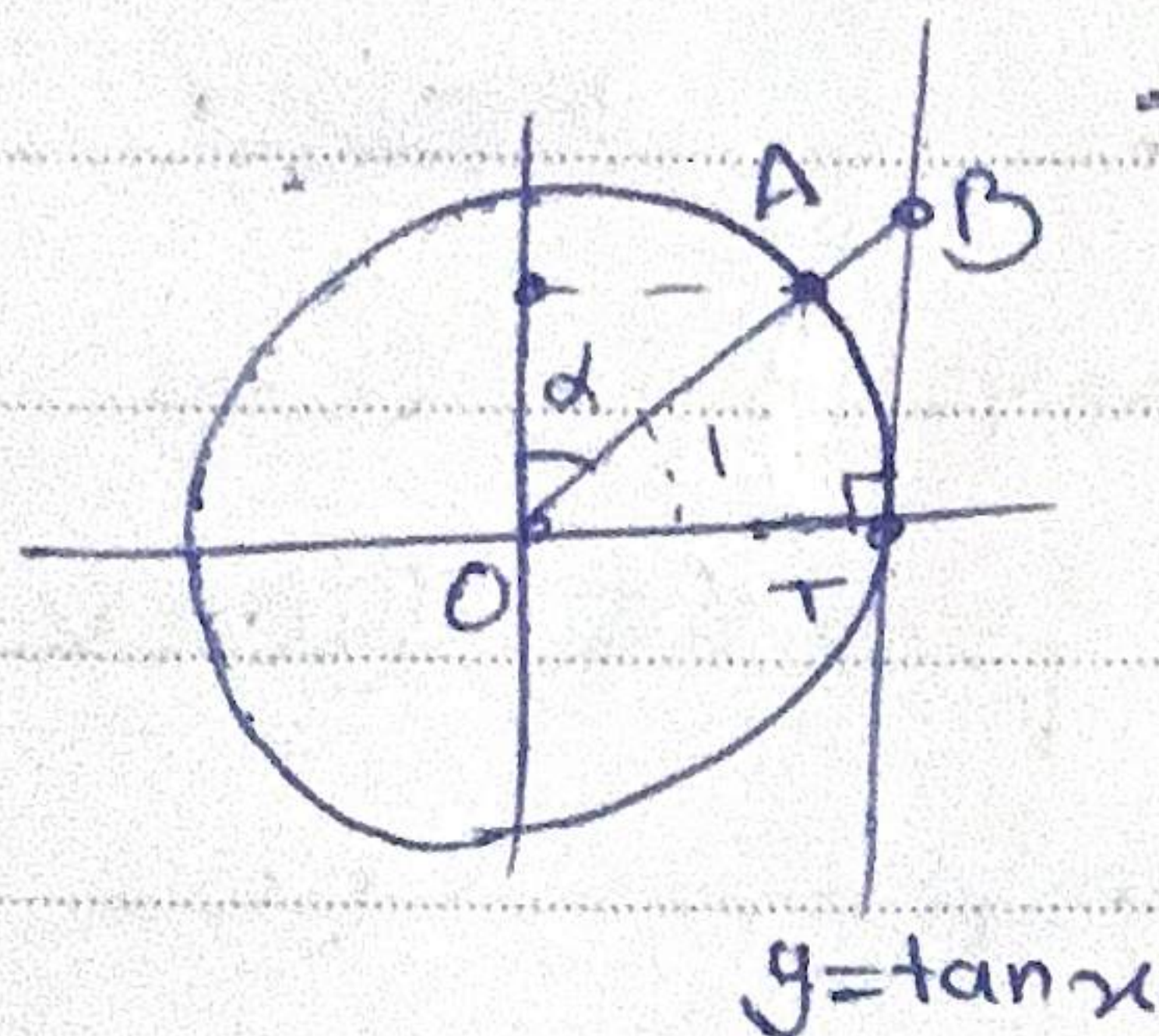


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سب سے پہلے

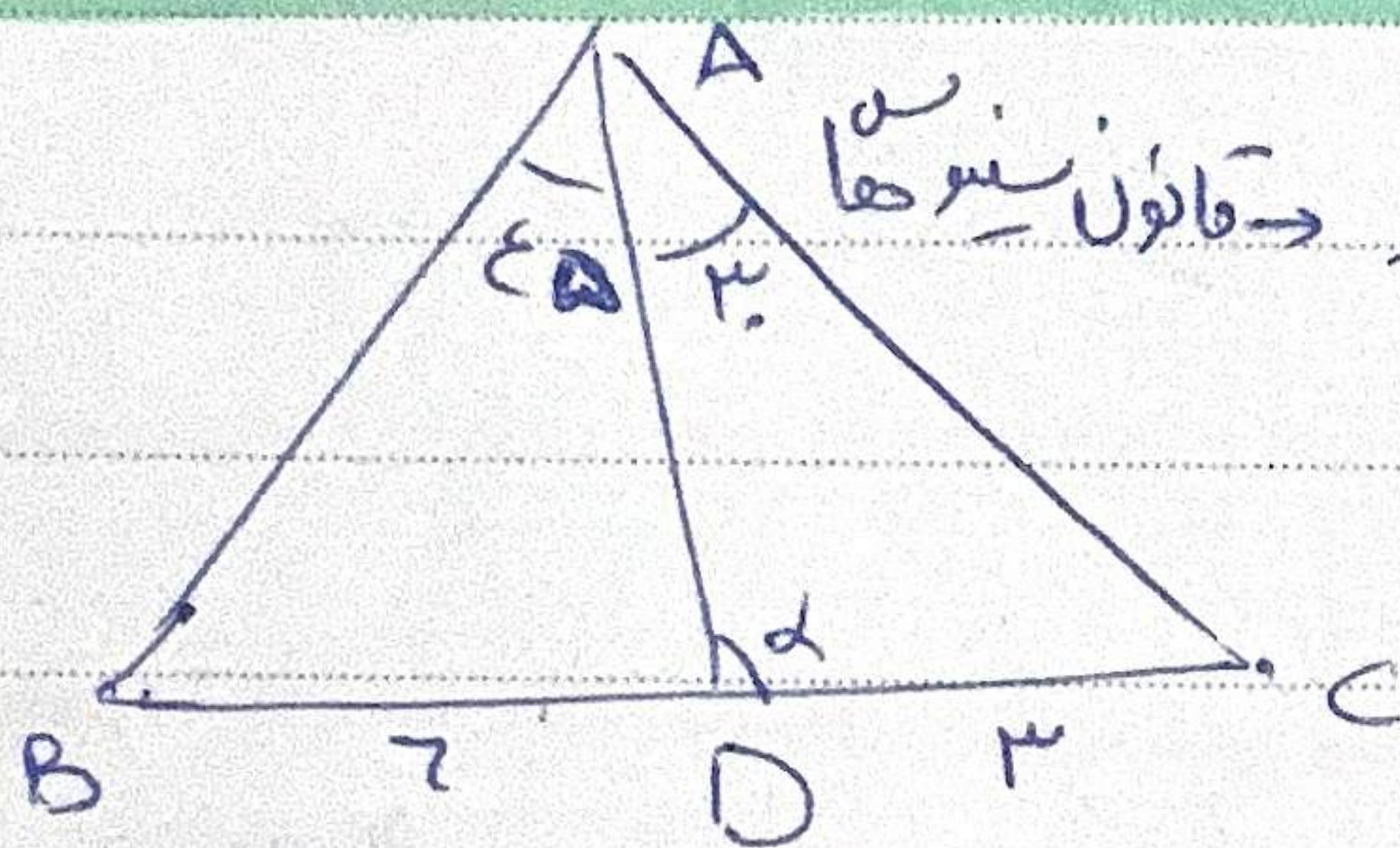


$$TB = \tan \hat{O} = \cot \alpha \quad OT = R = 1$$

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

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

۱ سوال



قانون سینر کا $\frac{\sin \epsilon}{z} = \frac{\sin \hat{B}}{AD} \quad \frac{\sin \hat{C}}{AD} = \frac{\sin \mu}{\mu}$

$$AD = \frac{\mu \sin \hat{B}}{\cancel{\mu} \times \cancel{\sin \hat{B}}} = \frac{\cancel{\mu} \times \sin \hat{C}}{\cancel{\sin \hat{C}}} \rightarrow \sqrt{\mu} \sin \hat{B} = \sin \hat{C}$$

$$\frac{\sin \hat{C}}{AB} = \frac{\sin \hat{B}}{AC} \rightarrow \frac{\sqrt{\mu} \sin \hat{B}}{AB} = \frac{\sin \hat{B}}{AC} \rightarrow \frac{AB}{AC} = \sqrt{\mu}$$

۲ سوال

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$$A\left(\frac{1}{r}, \frac{\sqrt{r}}{r}\right), B\left(-\frac{\sqrt{r}}{r}, \frac{1}{r}\right), C(0, -1)$$

سوال ۳

$$S_{\triangle ABC} = \frac{1}{r} |x_A(y_B - y_C) + x_B(y_C - y_A) + x_C(y_A - y_B)| \quad \text{الف}$$

$$= \frac{1}{r} \left| \frac{1}{r} \left(\frac{1}{r} + 1 \right) + \left(-\frac{\sqrt{r}}{r} \right) \left(-1 - \frac{\sqrt{r}}{r} \right) + 0 \right| = \frac{1}{r} \left| \frac{r}{r} + \frac{r\sqrt{r} + r}{r} \right| = \frac{r + \sqrt{r}}{r}$$

$$= \frac{r + \sqrt{r}}{r}$$

$$AB = \sqrt{(x_A - x_B)^2 + (y_A - y_B)^2}$$

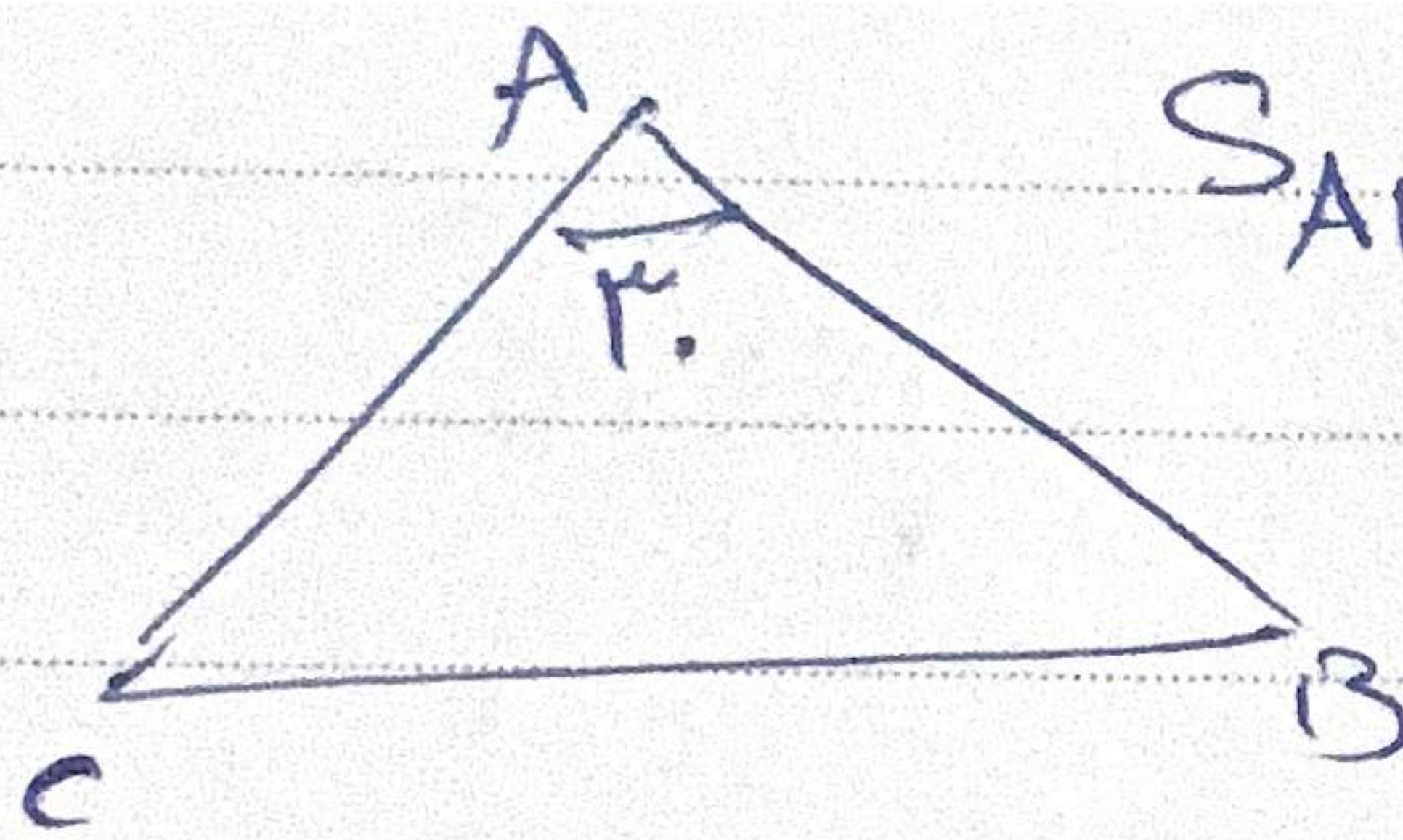
بیا

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

$$BC = \sqrt{\left(-\frac{\sqrt{r}}{r}\right)^2 + \left(\frac{1}{r} + 1\right)^2} = \sqrt{\frac{r + 4}{r}} = \sqrt{r}$$

$$AC = \sqrt{\left(\frac{1}{r}\right)^2 + \left(1 + \frac{\sqrt{r}}{r}\right)^2} = \sqrt{\frac{1 + r + r + 2\sqrt{r}}{r}} = \sqrt{r + \sqrt{r}}$$

$$\text{جواب} = \sqrt{r} + \sqrt{r} + \sqrt{r + \sqrt{r}}$$



$$S_{\triangle ABC} = \frac{1}{2} AB \times AC \times \sin \alpha$$

سوال ٤

$$S_{\triangle ABC} = \frac{1}{2} \times \text{height} \times \text{base} = \frac{1}{2} \times r \times \text{base}$$

$$= \frac{1}{2} \times r \times \text{base} = r$$

$$x = \cos \alpha \rightarrow r \cos^2 \alpha - \cos^2 \alpha - r \sin^2 \alpha + \sin^2 \alpha$$

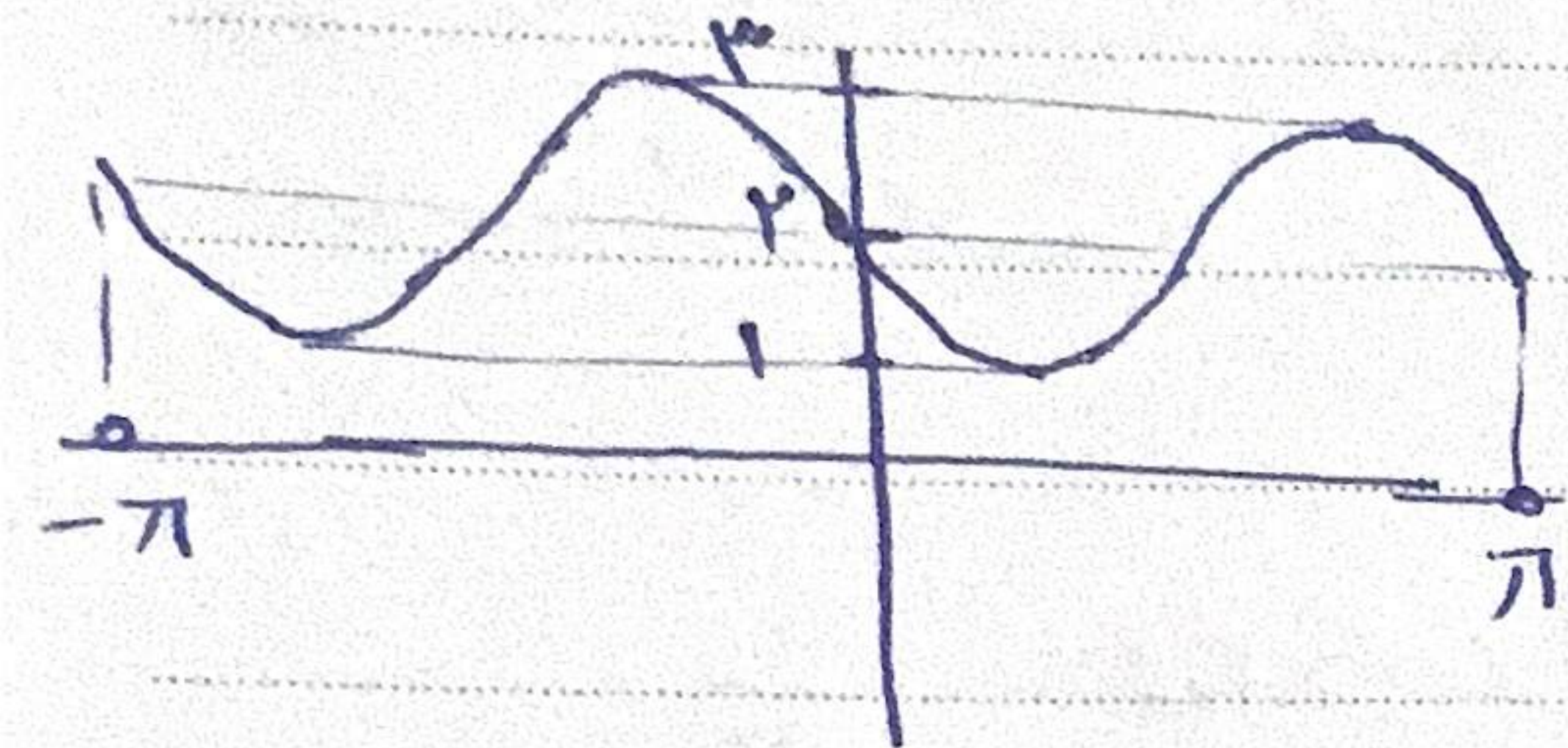
سوال ٥

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

$$= \cos 2\alpha = 1 \rightarrow \sin 2\alpha = \sqrt{1-1} = 0$$

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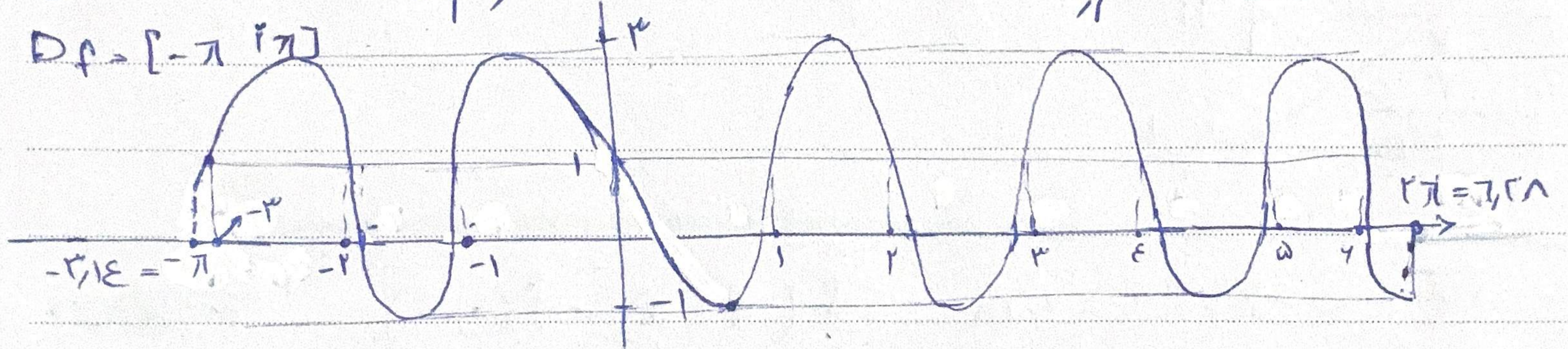
Let) $y = -r \sin x \cos x + r = r - \sin rx$ $[-\pi, \pi] = \text{Def}$ I ول



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

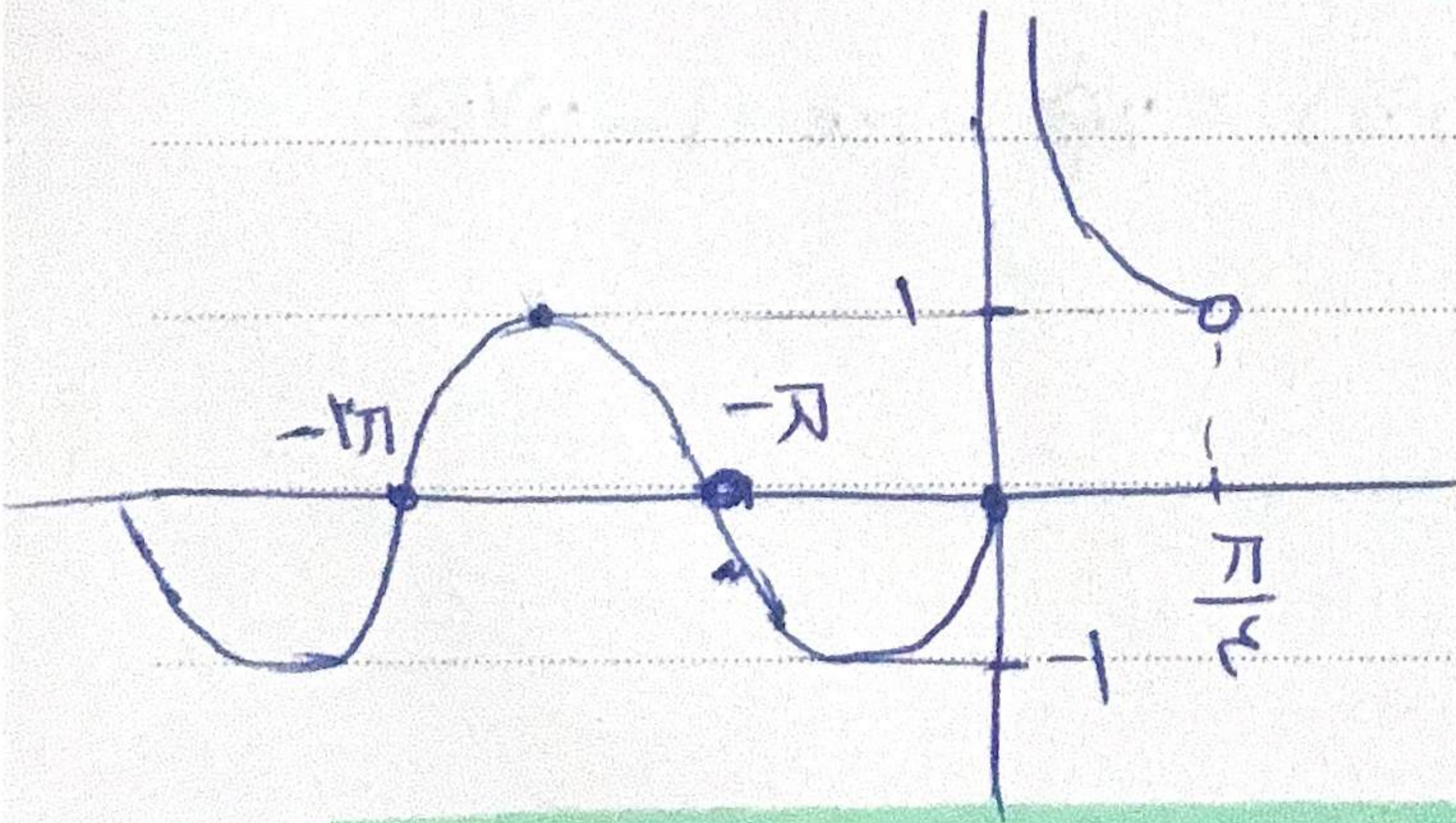
$$y = r \cos\left(\pi x + \frac{\pi}{r}\right) + 1 = 1 - r \sin \pi x \quad T = \frac{2\pi}{\pi} = 2 \quad \text{سوال 7}$$

$$Df = [-\pi, \pi]$$



سوال 8

$$Df = [-1, \infty)$$



$$f(n) = a + b \sin(cn) \times \cos(cn) \times \cos(rn) = a + \frac{b}{r} \sin(rn) \quad \underline{1 \text{ or } -1}$$

$$\frac{1}{r} \sin(rn)$$

$$\hookrightarrow \max = \left| \frac{b}{r} \right| + a = r$$

$$\min = a - \left| \frac{b}{r} \right| = 0$$

$$T = \frac{\cancel{\pi} \pi}{|rc|} = \frac{\cancel{\pi} \pi}{\cancel{\pi} \cdot \omega} \xrightarrow{C>0} C = \frac{\omega}{r}$$

$$\rightarrow a = r, \left| \frac{b}{r} \right| = r$$

$$|b| = r \quad \downarrow$$

$$n = \frac{\pi}{1} \rightarrow r + \frac{b}{r} \times \sin\left(\frac{\pi}{1} \times \frac{\omega}{r} \times r\right) = r + \frac{b}{r} = r \rightarrow b = +r$$

$$\frac{bc}{a} = \frac{1 \times \omega / r}{r} = \omega$$

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بنا اصفیائی

$$\max x = |a| + c = 2$$

$$\min = -|a| + c = -1$$

$$c = -1$$

$$|a| = 3 \rightarrow a = -3$$

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

سوال 9

چون نمودار نسبت به محور x ها

متقارن است.

$$f(x) = -3 \cos 2x - 1 \text{ s.o. } \rightarrow \cos 2x = -\frac{1}{3} \xrightarrow{x=\alpha} \cos 2\alpha = -\frac{1}{3}$$

$$\rightarrow |\sin 2\alpha| = \sqrt{1 - \frac{1}{9}} = \frac{2\sqrt{2}}{3}$$

$$|\tan 2\alpha| = \left| \frac{\sin 2\alpha}{\cos 2\alpha} \right| = 2\sqrt{2}$$

$$-x\varepsilon, \delta = -Kx^2 + 1, \omega \rightarrow f(-x\varepsilon, \omega) = f(1, \omega)$$

1. (1) e

$$\downarrow$$

$$-1 + 1, \omega = 1, \omega$$

$$f(1, \omega) = -\frac{1}{r} x \cdot 1, \omega + 1 = 1, \omega$$

$$f(x) = \begin{cases} -\frac{1}{r}x + 1 & \cdot \leq x < r \\ r_{m+1} - 1 & \leq x < \cdot \end{cases}$$