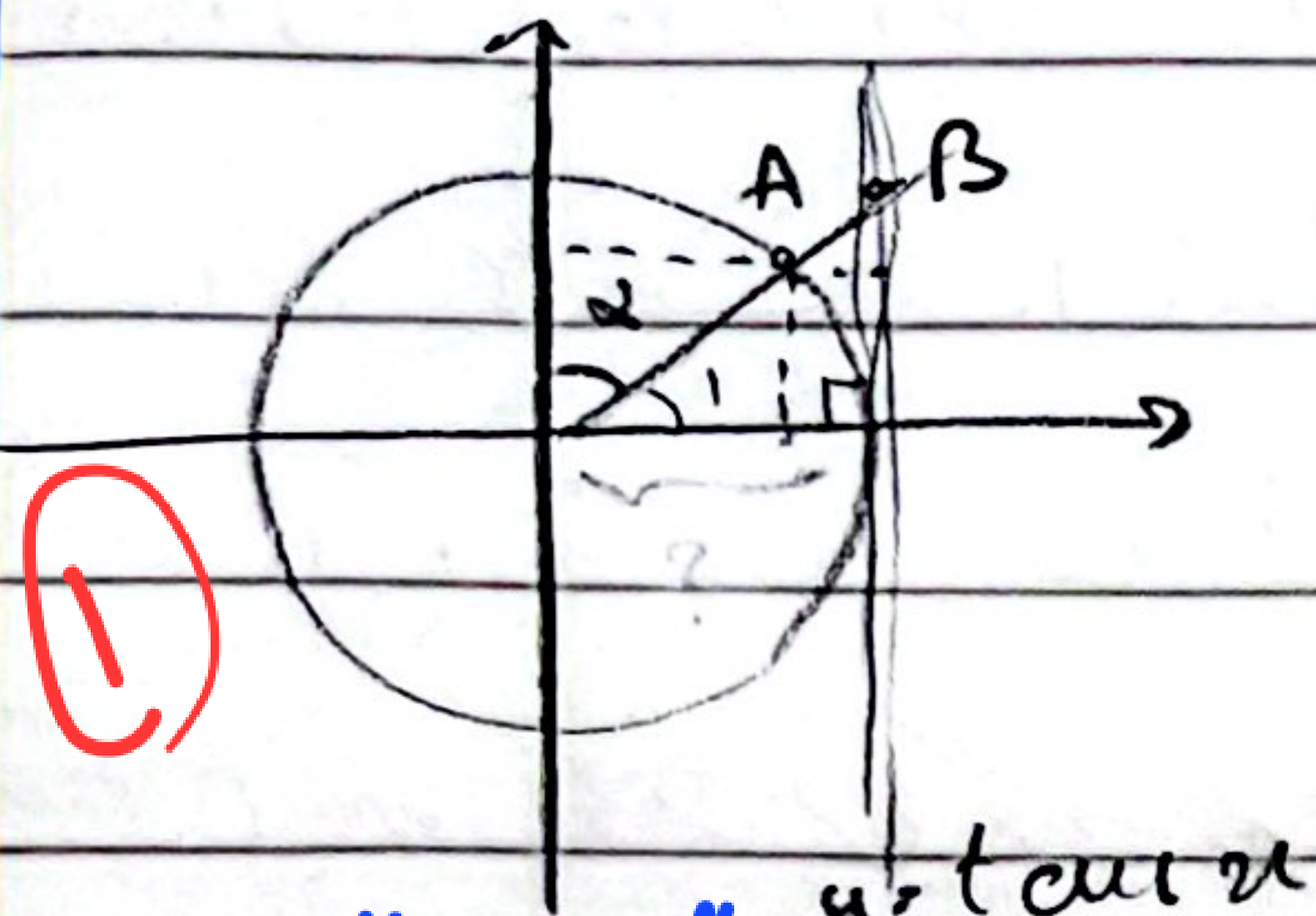


19, Va

செங்குத்து கோடு



$$\sin \alpha = \cos 1$$

$$\tan 1 - 1 = AB$$

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

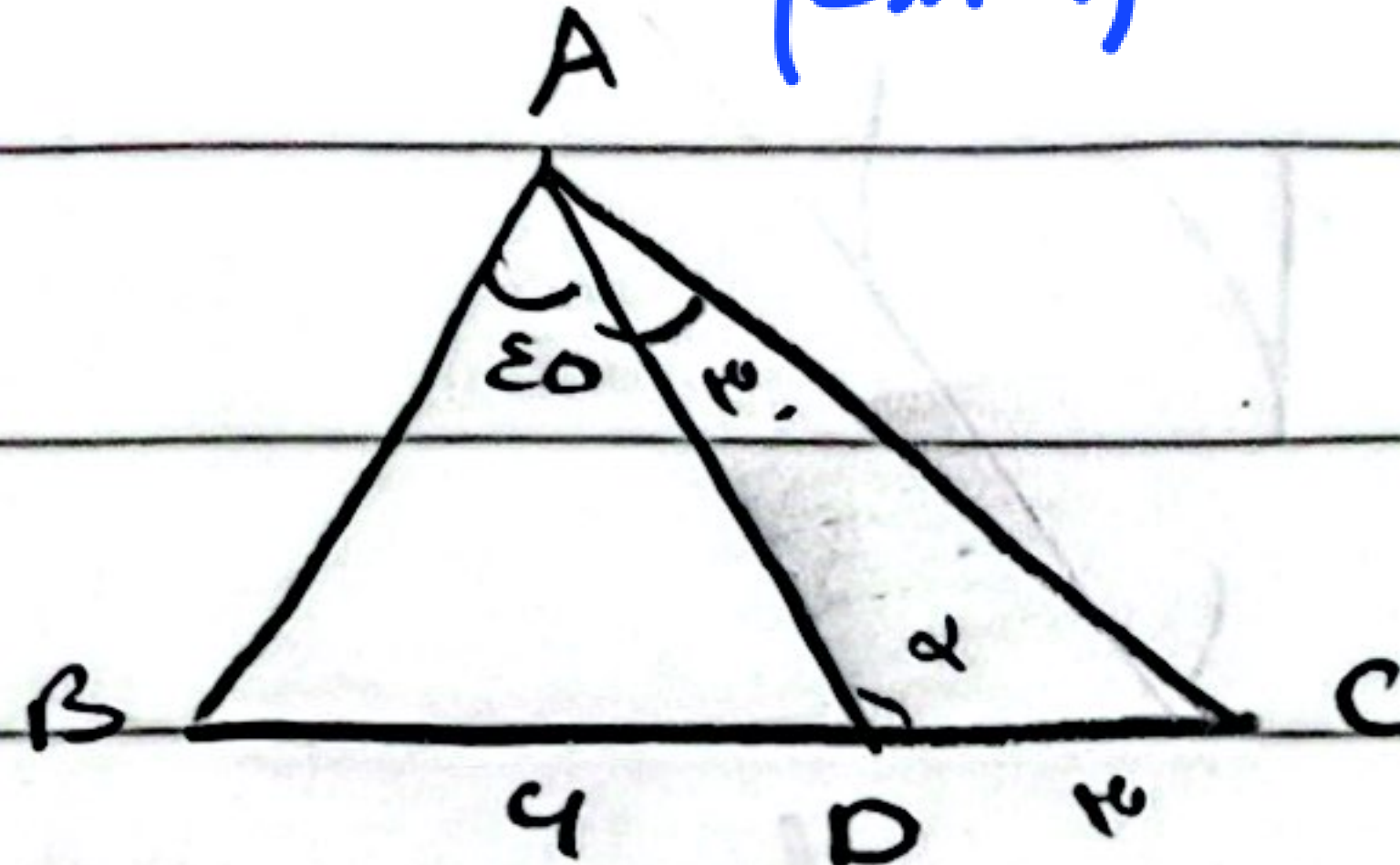
$$\sin 1 + \cos 1 = 1 \Rightarrow \sin 1 = \sqrt{1 - \cos^2 1}$$

$$OB' = OT' + BT' \rightarrow OB' = 1 + \cot' \alpha \rightarrow OB' = 1 + \cot' \alpha$$

$$1 + \cot' \alpha = \frac{1}{\sin' \alpha} \rightarrow OB = \frac{1}{\sin \alpha} \xrightarrow{\text{Multiply } OB} OB = \frac{1}{\sin \alpha} \rightarrow OB = OA + AB$$

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

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



$$\frac{1}{\sqrt{2}} = \frac{4}{\frac{1}{\sqrt{2}}} = \frac{AB}{\sin(\alpha - \epsilon)} \Rightarrow AB = \frac{1 \sin \alpha}{\sqrt{2}}$$

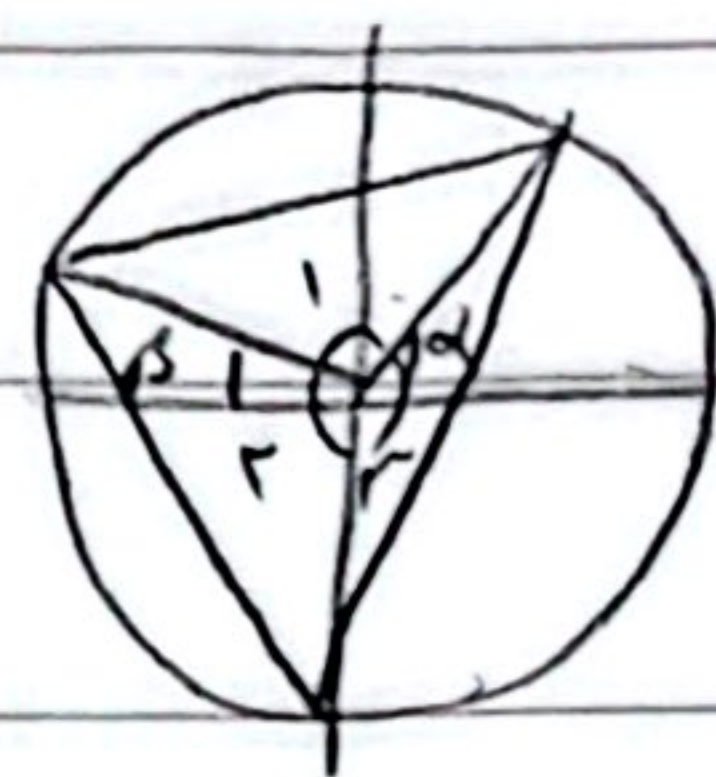
$$4 = \frac{3}{1} = \frac{AC}{\sin \alpha} \Rightarrow AC = 4 \sin \alpha$$

$$\Rightarrow \frac{AB}{AC} = \left(\frac{\frac{1 \sin \alpha}{\sqrt{2}}}{\frac{4 \sin \alpha}{1}} \right) = \frac{1}{4 \sqrt{2}} = \frac{1}{\sqrt{2} \cdot \sqrt{2}} = \frac{1}{2} \checkmark$$

4

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

$$\alpha + \beta = \alpha_0$$



(بنا)

$$S_1 = \frac{1}{r} \sin \alpha_0 \times OA \times OB = \frac{1}{r} \times 1 \times 1 \times 1 = \frac{1}{r}$$

$$S_2 = \frac{1}{r} \sin \alpha \times OB \times OC = \frac{1}{r} \times \frac{\sqrt{r}}{r} = \frac{\sqrt{r}}{r}$$

$$S_3 = \frac{1}{r} \sin \alpha_0 \times OC \times OB = \frac{1}{r} \times \frac{1}{r} = \frac{1}{r}$$

$$S_{\text{total}} = \frac{1}{r} + \frac{1}{r} + \frac{\sqrt{r}}{r} = \frac{r + \sqrt{r}}{r} \quad \checkmark$$

(ج)

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

(ب)

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

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

$$L_{\text{total}} = \sqrt{r} + \sqrt{r} + \sqrt{r+2\sqrt{r}} \quad \checkmark$$

$$AC = \log_r^{14} = \log_r^{r^k} = r \log_r^r$$

- r

$$BC = \log_r^{rv} = \log_r^{r^k} = r \log_r^r = \frac{r}{\log_r^r}$$

(r)

$$S_{ABC}^A = \sin \hat{A} \times \frac{1}{r} \times AB \times AC = r \log_r^r \times \frac{r}{\log_r^r} \times \frac{1}{r} \times \sin r^\circ =$$

$$S_{ABC}^A = \frac{1}{r} \times \frac{1}{r} \times r \times r = r \quad \checkmark$$

$$n - \cos \alpha \geq 0 \Rightarrow n \geq \cos \alpha$$

- w

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

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

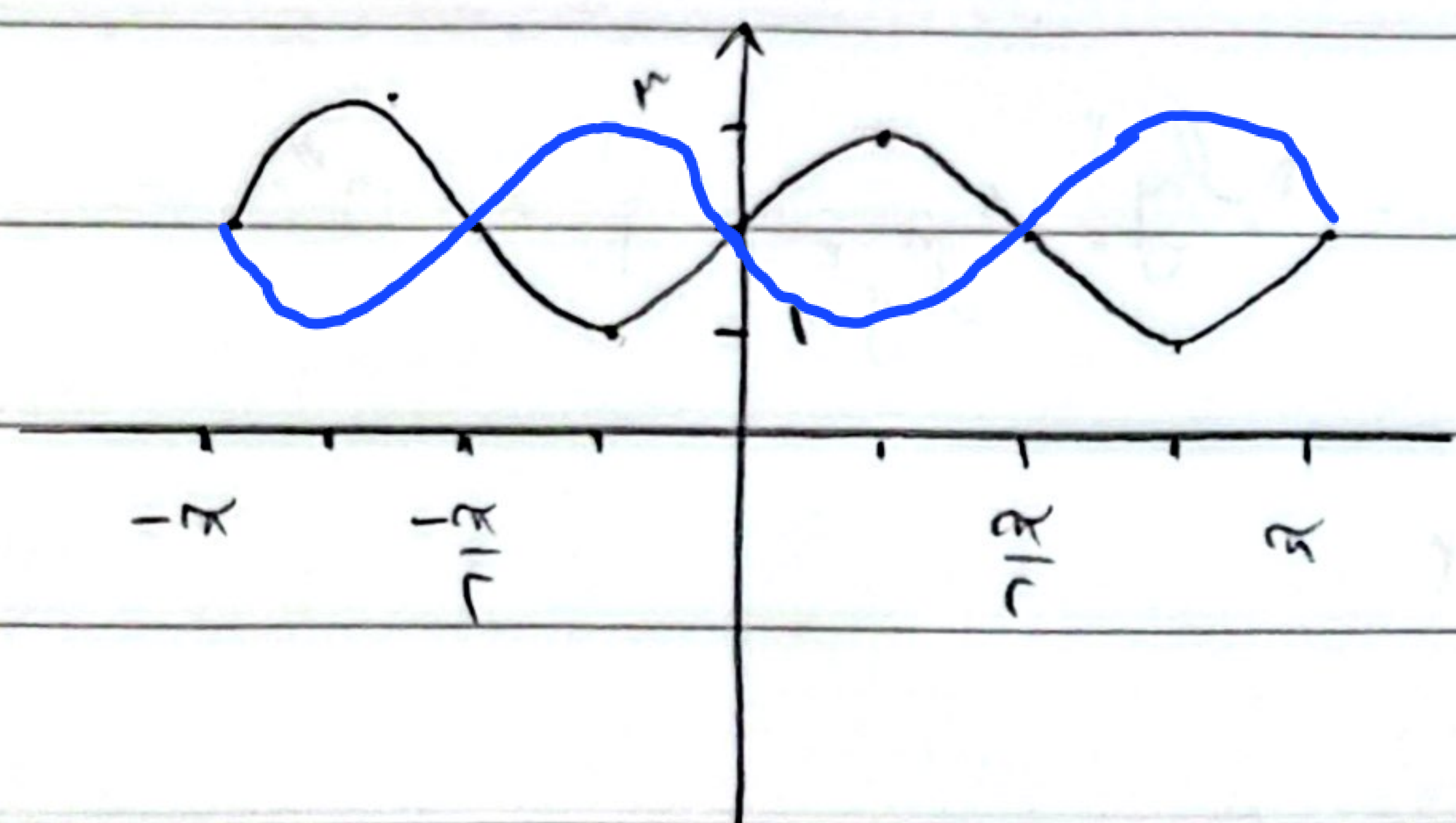
(r)

$$\cos^r \alpha + \sin^r \alpha = 1 \Rightarrow \sin^r \alpha = 0 \quad \checkmark$$

$$\text{Sol 1) } -Y \sin \alpha \cdot \cos \alpha + Y = -\sin Y \alpha + Y \quad [-\pi, \pi]$$

-4

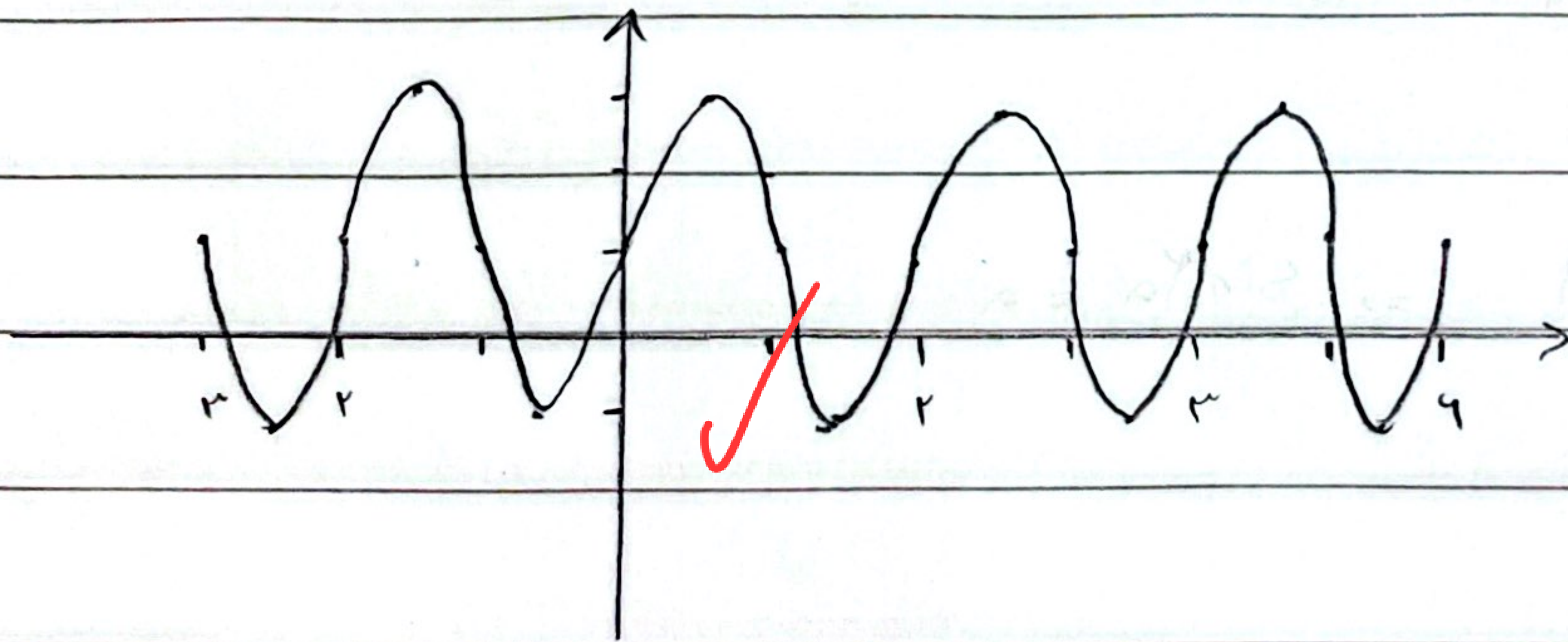
$$T = \frac{Y_m}{Y} = \pi, \quad \text{max} = |-1| + Y = 3, \quad \text{min} = -|-1| + Y = 1$$



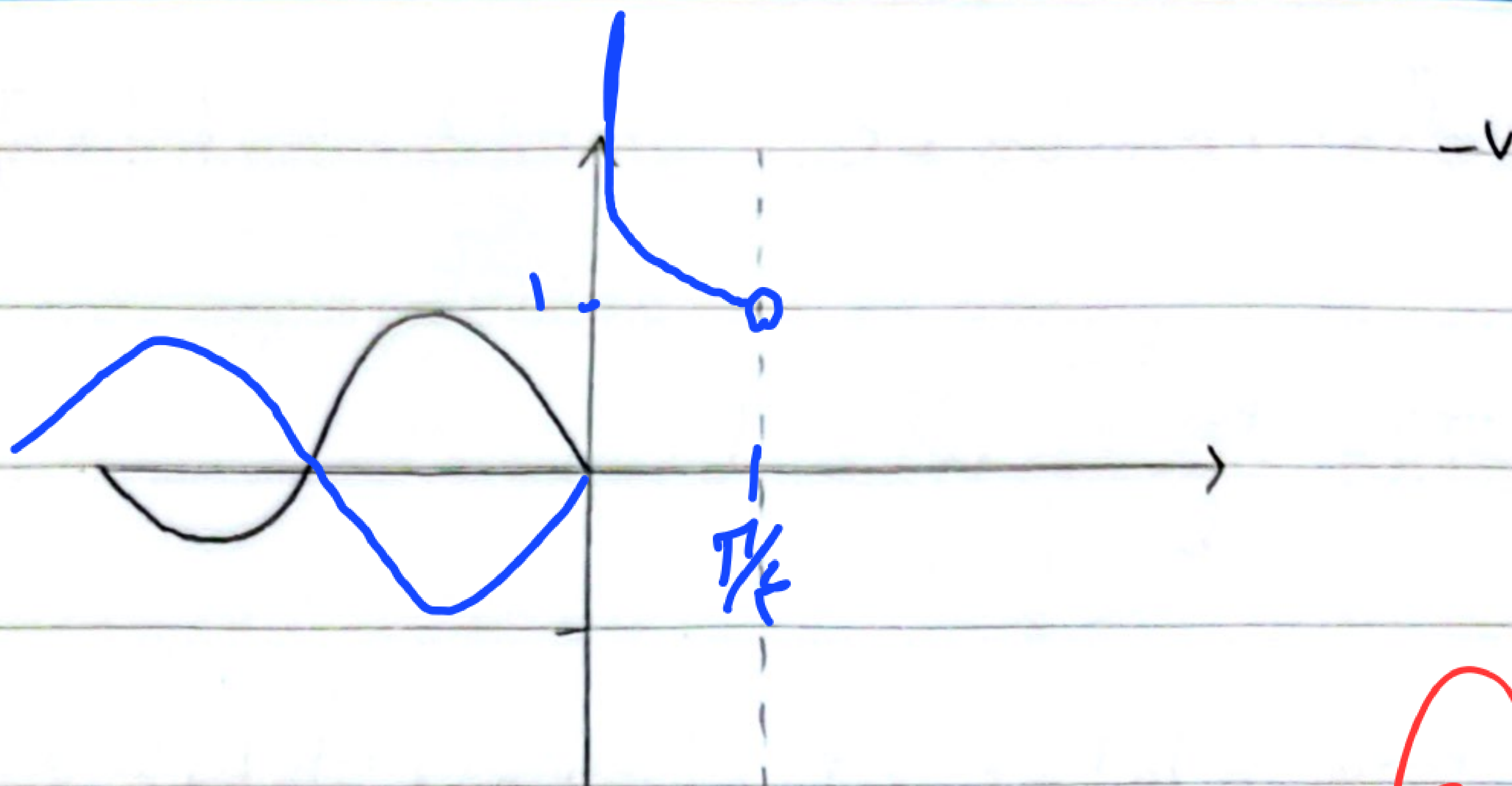
1, 1, 1

$$\text{Sol 2) } Y \cos \left(n + \frac{1}{2} \right) \pi + 1 = Y \cos \left(\frac{\pi}{2} + \pi n \right) + 1 = -Y \sin \pi n + 1$$

$$T = \frac{Y_m}{Y} = Y, \quad \text{max} = |-Y| + 1 = 3, \quad \text{min} = -|-Y| + 1 = -1$$



$$\begin{cases} \cot \alpha & 0 < \alpha < \frac{\pi}{2} \\ \sin \alpha & \alpha = 0 \end{cases}$$



$$R = (-1, 1]$$

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

⑥

$$f(\alpha) = a + b \sin(\alpha) \cdot \cos(\alpha), \cos(\alpha) =$$

$$a + \frac{b}{r} \sin(\alpha) \cdot \cos(\alpha) = a + \frac{b}{r} \sin(\alpha)$$

$$T = \frac{\omega \pi}{1} - \frac{\pi}{1} = \frac{r \pi}{1} = \frac{r \pi}{\omega} = \frac{r \pi}{r c} \Rightarrow c = \frac{r}{\omega}$$

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

$$\max = a + \left| \frac{b}{r} \right| = 2 \Rightarrow r a = 2 \Rightarrow a = \frac{2}{r}, \frac{b}{r} = 1 \Rightarrow b = r$$

$$\frac{b c}{a} = \frac{1 \times \frac{3}{4}}{2} = \frac{3}{8}$$

⑦

$$f(n) = a \cos bn + c$$

9

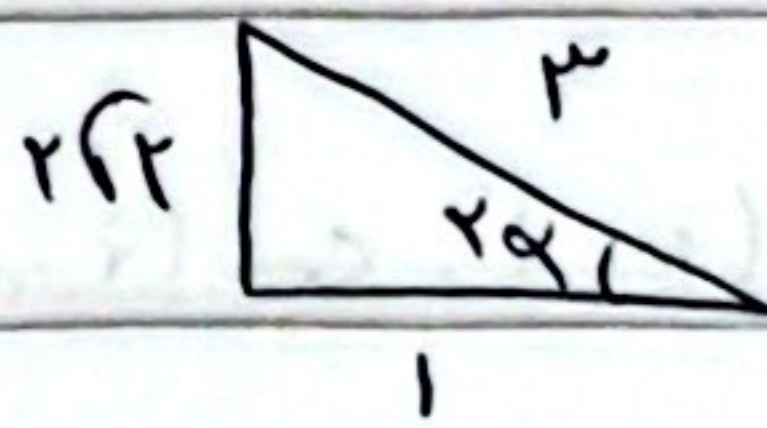
$$T = \frac{2\pi}{b} = \pi \Rightarrow b = 2$$

$$\max = |a| + c = 2, \min = -|a| + c = -1 \Rightarrow c = -1, a = -2$$

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

2

$$-2 \cos 2\alpha - 1 = 0 \Rightarrow \cos 2\alpha = -\frac{1}{2} \Rightarrow$$



$$|\tan \alpha| = \sqrt{3}$$

$$y = f(n) = f(n \pm T)$$

10

$$f(-\pi, \omega) = f(n - \pi) \Rightarrow n - \pi = -\pi, \omega \Rightarrow f(1, \omega)$$

$$f(1, \omega) = -\frac{1}{\pi} n + 1 \Rightarrow$$

2

$$f(1, \omega) = -\frac{1}{\pi} \left(\frac{\pi}{\pi} \right) + 1 = -\frac{1}{\pi} + 1 = \frac{1}{\pi} = \frac{1}{\pi}, \omega$$