

19, 75

نام و نام خانوادگی: عرفان شیرین پاسخنامه تشریحی تکلیف شماره 14 کلاس A

الف) $D \xrightarrow{\frac{\pi}{180}} \text{rad} \Rightarrow 12 \times \frac{\pi}{180} \Rightarrow \frac{4\pi}{9} = \frac{12\pi}{9} \text{ rad}$ (2)

ب) $D \xrightarrow{\frac{\pi}{180}} \text{rad} \Rightarrow 120 \times \frac{\pi}{180} \Rightarrow \frac{2\pi}{3} \text{ rad}$ 1

ج) $\text{rad} \xrightarrow{\frac{180}{\pi}} D \Rightarrow \frac{5\pi}{12} \times \frac{180}{\pi} = 75^\circ$ ✓

د) $\text{rad} \xrightarrow{\frac{180}{\pi}} D \Rightarrow \frac{5\pi}{9} \times \frac{180}{\pi} = 100^\circ$ ✓

$\text{rad} \xrightarrow{\frac{180}{\pi}} D \Rightarrow \frac{0.7\pi}{1} \times \frac{180}{\pi} = 126^\circ$ ✓ (2)

هـ) $D \xrightarrow{\frac{180}{\pi}} \text{rad} \Rightarrow \frac{126^\circ}{9} \times \frac{\pi}{180} = \frac{7\pi}{90}$ ✓
 $\frac{126^\circ}{9} + 1.2 = 14^\circ$ ✓
 $\Rightarrow \alpha = 14^\circ$ ✓

الف) $\cos 9^\circ \cos 3^\circ - \sin 9^\circ \sin 3^\circ - \tan 45^\circ + \sec 45^\circ$ (2)
 $= \cos 9^\circ \cos 3^\circ - \sin 9^\circ \sin 3^\circ - 1 + 1$
 $= \cos 12^\circ = 1$ ✓

ب) $(\tan^2 3^\circ + \tan^2 45^\circ + \tan^2 9^\circ) \div (\sec 45^\circ - \sec 9^\circ) =$ ✓
 $(\frac{1}{9} + 1 + 9) \div (\sqrt{2} - \frac{1}{\sqrt{2}}) = (\frac{10}{9}) \div (\frac{\sqrt{2}-1}{\sqrt{2}}) = \frac{10\sqrt{2}}{9(\sqrt{2}-1)} = \frac{10\sqrt{2}}{9}$

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

$= \sin^2 \theta \Rightarrow \sin \theta = \pm \frac{1}{\sqrt{2}}, \cos \theta = \pm \frac{1}{\sqrt{2}}$ 4

$\Rightarrow \theta = 45^\circ$ $\Rightarrow \tan \theta = 1$ ✓ (2)

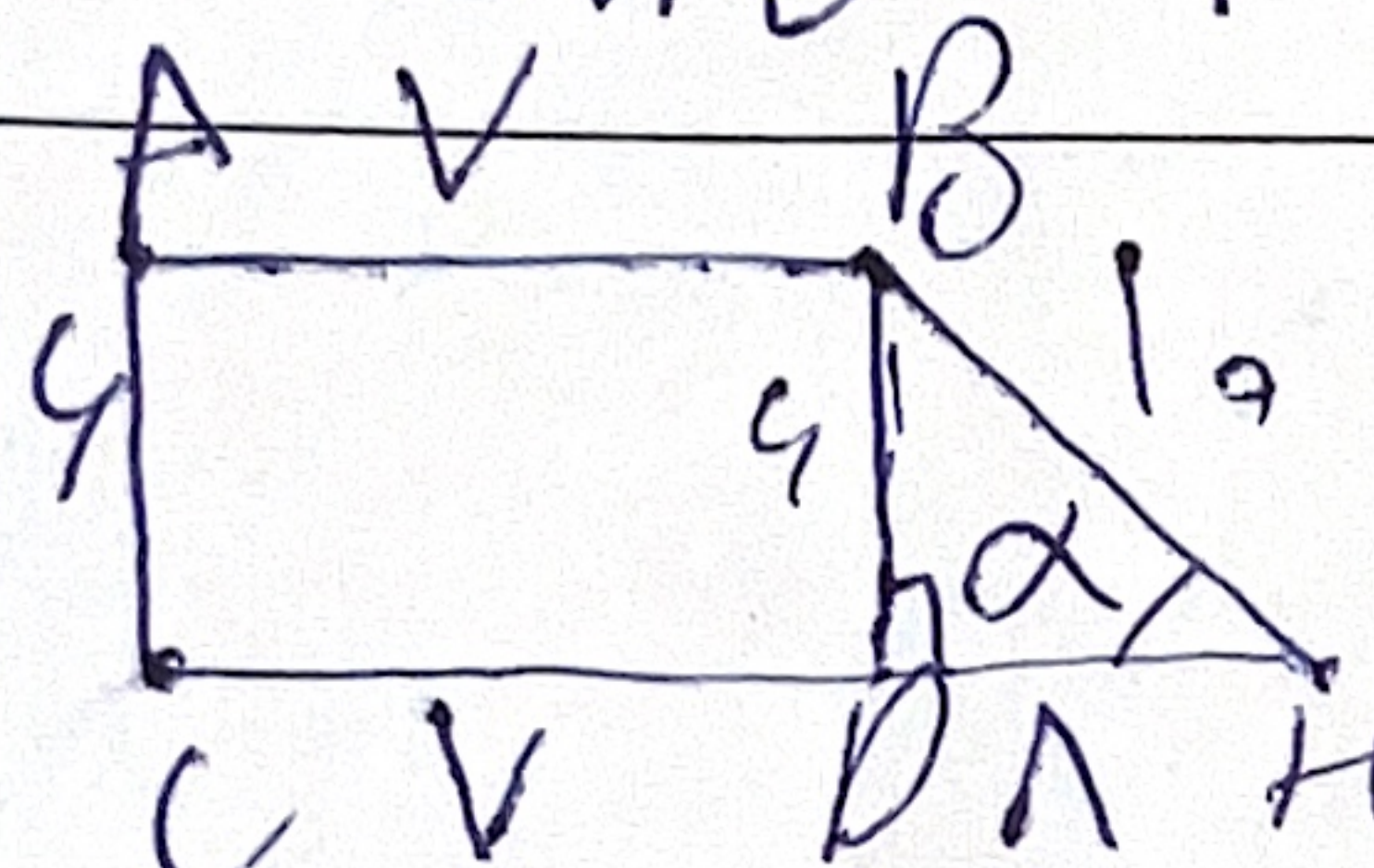
$\frac{2 \tan 3^\circ (1 - \tan^2 3^\circ)}{(1 - \cos^2 9^\circ)^2} = \tan \theta$

$\text{Deg} \xrightarrow{\frac{\pi}{180}} \text{Rad}$ (2)

$= \frac{2\sqrt{3}}{9} \times (1 - \frac{1}{9}) \times \frac{1}{9} = \frac{2\sqrt{3}}{9} \times \frac{8}{9} = \frac{16\sqrt{3}}{81}$ 5
 $\Rightarrow \tan \theta = \sqrt{3} \Rightarrow \theta = 60^\circ$ ✓

$$\frac{r \sin \theta - c \cos \theta}{\sin \theta - r \cos \theta} = \frac{r \sin \theta - c \cos \theta}{\sin \theta - r \cos \theta} \div \frac{c \cos \theta}{c \cos \theta}$$

$$= \frac{r \tan \theta - 1}{\tan \theta - r} = \frac{(r \times a) - 1}{a - r} = 1 \quad \checkmark$$



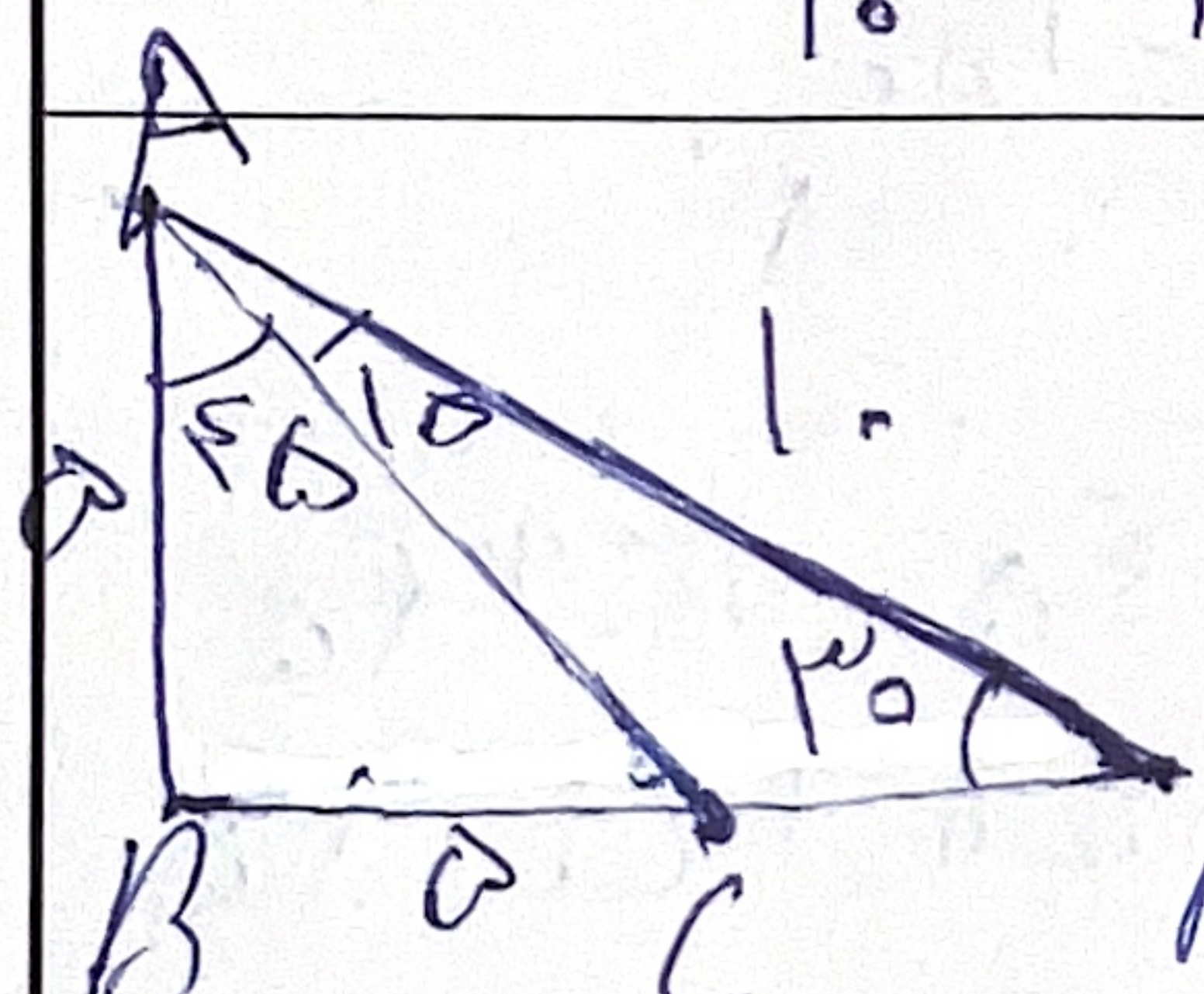
$\sin \alpha = \frac{4}{BH} = \frac{4}{10} \Rightarrow BH = 10$

$\cos \alpha = \sqrt{1 - \sin^2 \alpha} = \sqrt{1 - 0.16} = 0.8$

$\cos \alpha = \frac{DH}{10} = \frac{1}{10} \Rightarrow DH = 1$

$P = 4 + 1 + 1 = 6$

$V + 1 = 10$

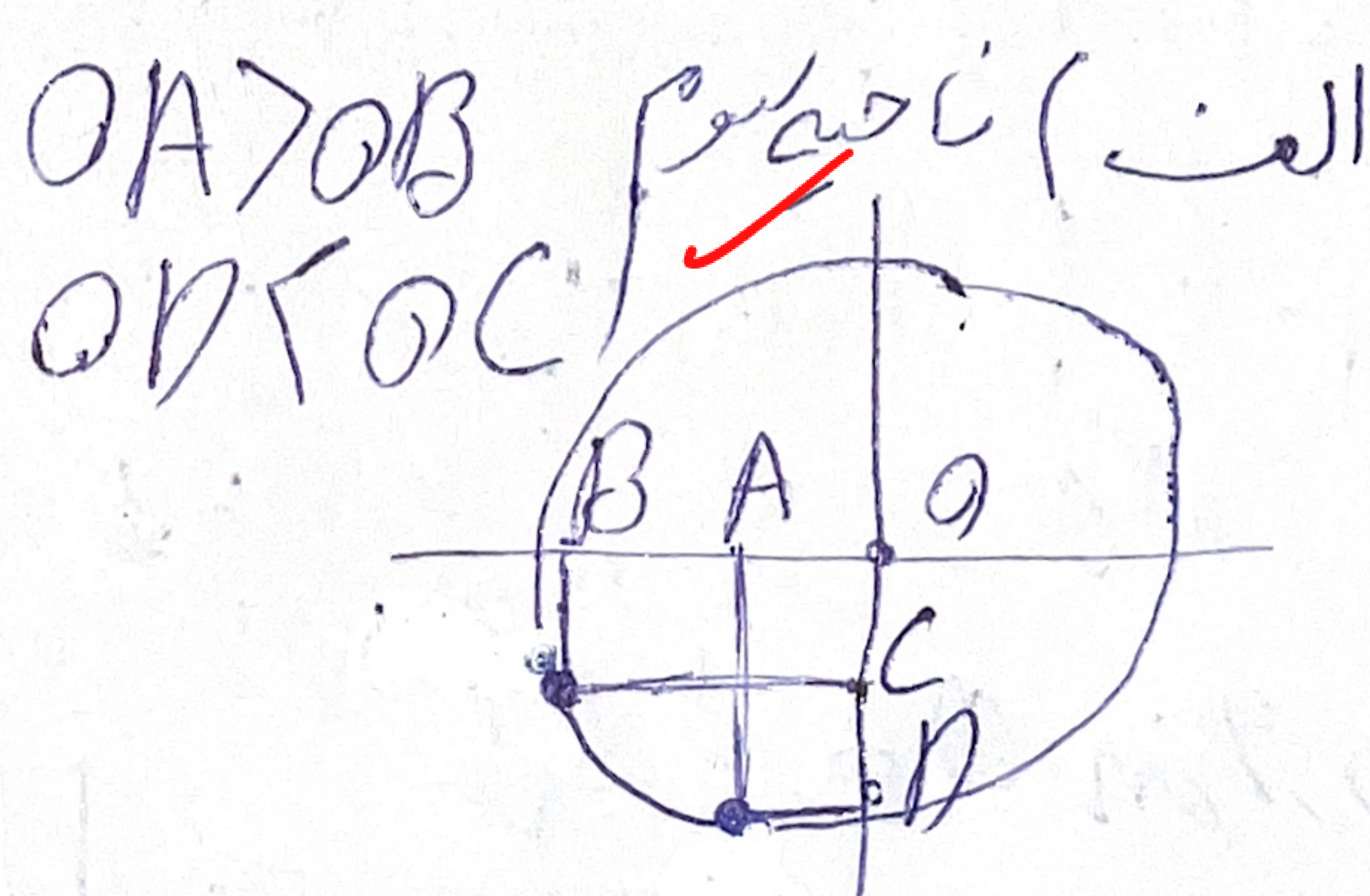
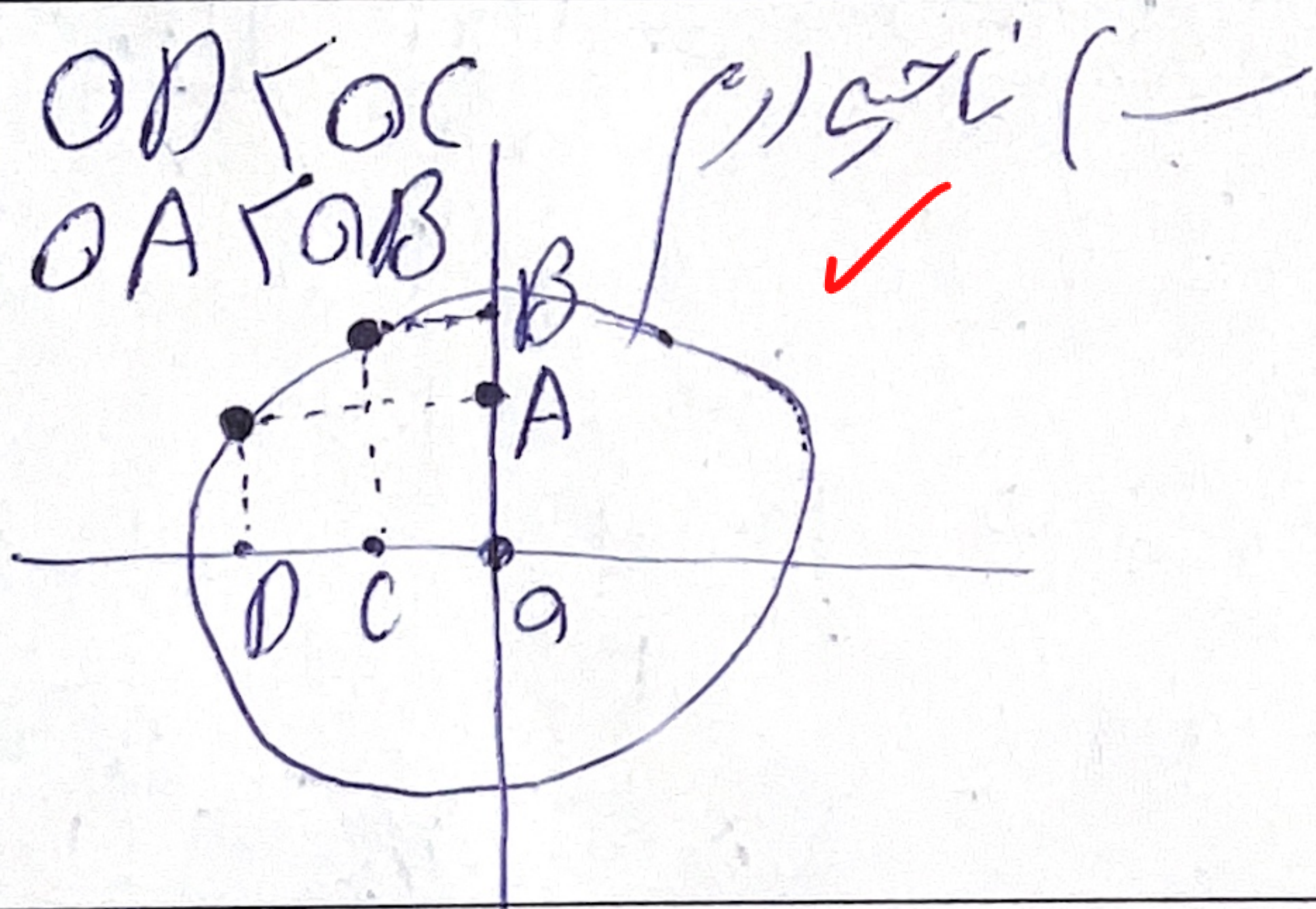


$\sin D = \frac{AB}{10} = \frac{1}{10} \Rightarrow AB = 1 \Rightarrow BC = 10$

$\sin A = \frac{BD}{10} = \frac{\sqrt{3}}{10} \Rightarrow BD = 10\sqrt{3}$

$BD = 10 + CD = 10\sqrt{3}$

$\Rightarrow CD = 10\sqrt{3} - 10 = 10(\sqrt{3} - 1) \quad \checkmark$



$\tan \theta = \frac{1}{9} \Rightarrow \frac{\sin \theta}{\cos \theta} = \frac{1}{9} \Rightarrow \cos \theta = 9 \sin \theta$

$\Rightarrow 9 \sin \theta - \cos \theta = 0 \Rightarrow 9 \sin \theta - (1 - \sin^2 \theta) = 0$

$\Rightarrow 10 \sin^2 \theta - 1 = 0 \Rightarrow 10 \sin^2 \theta = 1 \Rightarrow \sin^2 \theta = \frac{1}{10}$

$\Rightarrow \sin \theta = \pm \frac{1}{\sqrt{10}} = \pm \frac{\sqrt{10}}{10}$

$\sin \theta = \frac{\sqrt{10}}{10} \quad \checkmark$