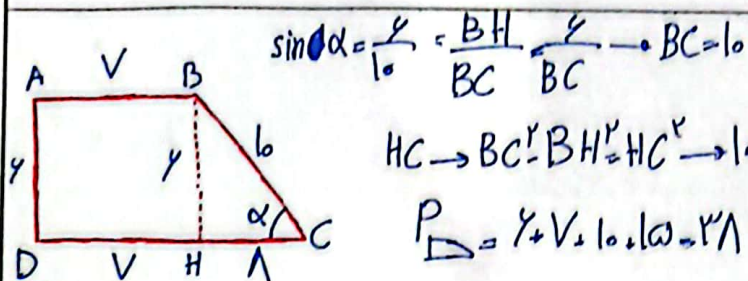


$$\tan \theta = \omega \rightarrow \frac{\sin \theta}{\cos \theta} = \omega \rightarrow \sin \theta = \omega \cos \theta$$

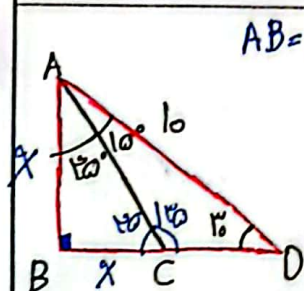
$$\frac{\omega(\omega \cos \theta) - \cos \theta}{\omega \cos \theta - \omega \cos \theta} = \frac{1 \cos \theta}{\cos \theta} = 1$$



$$\sin \alpha = \frac{y}{l} = \frac{BH}{BC} \rightarrow BC = l$$

$$HC \rightarrow BC^2 - BH^2 = HC^2 \rightarrow l^2 - y^2 = HC^2 \rightarrow HC = \sqrt{l^2 - y^2}$$

$$P_D = y + V + l \cdot \omega = 21$$



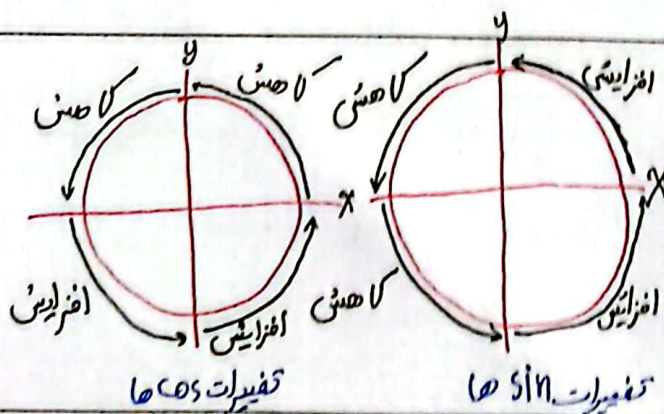
$$AB = BC \rightarrow \sin \theta = \frac{\sqrt{3}}{2} = \frac{BD}{l} \rightarrow BD = \omega \sqrt{3}$$

$$\sin \theta = \frac{1}{2} = \frac{AB}{l} \rightarrow AB = \omega \Rightarrow BC = \omega$$

$$CD = BD - BC = \omega \sqrt{3} - \omega$$

الف) ناحیه ۳

ب) ناحیه ۲



$$\tan^2 \alpha = \frac{1}{\cos^2 \alpha} \rightarrow \frac{1}{9} + 1 = \frac{10}{9} = \frac{1}{\cos^2 \alpha} \rightarrow \cos^2 \alpha = \frac{9}{10} \rightarrow \cos \alpha = \frac{3}{\sqrt{10}}$$

$$\cos^2 \alpha + \sin^2 \alpha = 1 \rightarrow \frac{9}{10} + \sin^2 \alpha = 1 \rightarrow \sin^2 \alpha = \frac{1}{10} \rightarrow \sin \alpha = \left(\frac{1}{\sqrt{10}} \right)$$

الف) $\frac{27}{110} = \frac{x}{\pi} \rightarrow x = \frac{27}{110} \pi$

ب) $\frac{150}{110} = \frac{x}{\pi} \rightarrow x = \frac{150}{110} \pi = \frac{15}{11} \pi$

ج) $\frac{10}{11} = \frac{x}{110} \rightarrow x = 110 \times \frac{10}{11} = 100 \rightarrow x = 100^\circ$

د) $\frac{10}{9} = \frac{x}{110} \rightarrow x = 110 \times \frac{10}{9} = 110 \rightarrow x = 110^\circ$

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۱) $\frac{150}{9} = \frac{x}{110} \rightarrow x = 110 \times \frac{150}{9} = 183.33$ $\frac{27}{11} = \frac{y}{110} \rightarrow y = 270$

$104.22 + 183.33 = 287.55 \rightarrow 287.55 = 110 \rightarrow a = 15$

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الف) $\frac{1}{p} \times \frac{\sqrt{3}}{p} = \frac{\sqrt{3}}{p} \times \frac{1}{p} - 1 + p = 1 \rightarrow \cos 30^\circ = \frac{\sqrt{3}}{2}, \sin 30^\circ = \frac{1}{2}, \tan 30^\circ = \frac{1}{\sqrt{3}}, \cot 30^\circ = \sqrt{3}$

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ب) $\frac{(\frac{\sqrt{3}}{p})^2 + 1 + (\frac{1}{p})^2}{\sqrt{2} - \frac{\sqrt{3}}{p}} = \frac{\frac{3}{p^2} + 1 + \frac{1}{p^2}}{\frac{2\sqrt{2}p - \sqrt{3}}{p}} = \frac{\frac{4}{p^2} + 1}{\frac{2\sqrt{2}p - \sqrt{3}}{p}} = \frac{4 + p^2}{2\sqrt{2}p - \sqrt{3}}$

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$-\frac{1}{p} \times \frac{1}{p} + \frac{\sqrt{3}}{p} \times \frac{\sqrt{3}}{p} = \frac{1}{p} = \sin \theta \rightarrow \sin \theta = \frac{1}{p} = \frac{\sqrt{p}}{p}$
 $\sin^2 \theta + \cos^2 \theta = 1 \rightarrow \frac{1}{p} + \cos^2 \theta = 1 \rightarrow \cos^2 \theta = \frac{p-1}{p} \rightarrow \cos \theta = \frac{\sqrt{p-1}}{\sqrt{p}}$
 $\tan \theta = \frac{\frac{\sqrt{p}}{p}}{\frac{\sqrt{p-1}}{\sqrt{p}}} = 1$

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$\frac{2 \times \frac{\sqrt{3}}{p} (1 - \frac{1}{p})}{1 - \frac{1}{p}} = \frac{2\sqrt{3} \times \frac{p-1}{p^2}}{\frac{p-1}{p}} = \frac{2\sqrt{3}}{p} = \frac{2\sqrt{3}}{2} = \sqrt{3} = \tan \theta \rightarrow \theta = 60^\circ$
 $\frac{60}{180} = \frac{x}{\pi} \rightarrow x = \frac{1}{3} \pi$