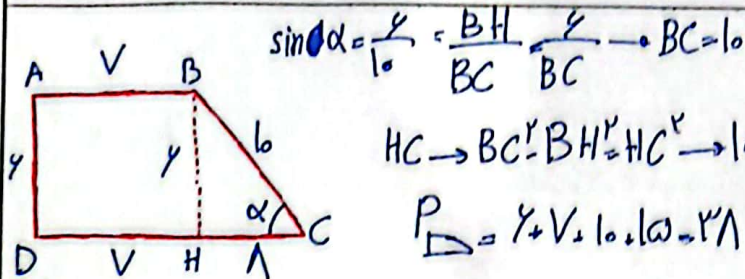


$$\tan \theta = \omega \rightarrow \frac{\sin \theta}{\cos \theta} = \omega \rightarrow \sin \theta = \omega \cos \theta$$

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

(C) ✓

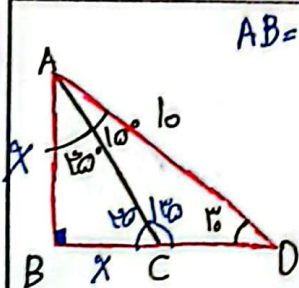


$$\sin \alpha = \frac{y}{l} = \frac{BH}{BC} \rightarrow BC = l$$

$$HC \rightarrow BC^2 - BH^2 = HC^2 \rightarrow 100 - 4^2 = 84 \rightarrow HC = \sqrt{84}$$

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

(C) ✓



$$AB = BC \rightarrow \sin 30 = \frac{\sqrt{3}}{2} = \frac{BD}{10} \rightarrow BD = 5\sqrt{3}$$

$$\sin 45 = \frac{1}{\sqrt{2}} = \frac{AB}{10} \rightarrow AB = 5\sqrt{2} \Rightarrow BC = 5\sqrt{2}$$

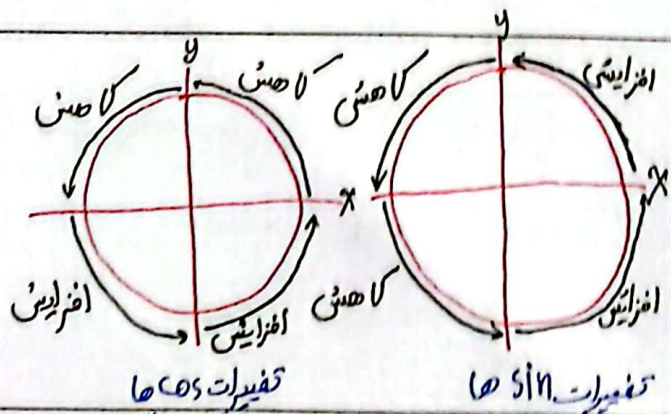
$$CD = BD - BC = 5\sqrt{3} - 5\sqrt{2}$$

(C) ✓

الف) ناحیه ۳

ب) ناحیه ۲

(C) ✓



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

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

(C) ✓

الف) $\frac{27}{110} = \frac{x}{\pi} \rightarrow x = \frac{2}{110} \pi$

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

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

د) $\frac{14}{110} = \frac{x}{\pi} \rightarrow x = 110 \times \frac{14}{11} = 140 \rightarrow x = 140^\circ$

۱) $\frac{150}{9} = \frac{x}{110} \rightarrow x = 110 \times \frac{150}{9} = 183.33$ $\frac{2}{110} = \frac{y}{110} \rightarrow y = 220$

$104.22 + 110 = 214.22 \rightarrow 214.22 = 110 \rightarrow a = 104.22$

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

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

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

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

$\tan \theta = \frac{\sqrt{p}}{\sqrt{p-1}} = 1$

$2 \times \frac{\sqrt{3}}{p} (1 - \frac{1}{p}) = \frac{2\sqrt{3}}{p} \times \frac{p-1}{p} = \frac{2\sqrt{3}(p-1)}{p^2}$

$1 - \frac{1}{p} = \frac{p-1}{p} = \frac{2}{p} \rightarrow \frac{p-1}{p} = \frac{2}{p} \rightarrow p-1 = 2 \rightarrow p = 3$

$\frac{\sqrt{3}}{2} = \sqrt{p} = \tan \theta \rightarrow \theta = 60^\circ$

$\frac{60}{110} = \frac{x}{\pi} \rightarrow x = \frac{1}{11} \pi$