

$$\text{الف) } \frac{2\sqrt{3}}{180} = \frac{\text{Rad.}}{\pi} = 20\text{rad}, 3\pi \rightarrow \text{rad} = \frac{3\pi}{20}$$

$$\text{ب) } \frac{12\sqrt{3}}{360} = \frac{\text{rad}}{\pi} \rightarrow 34\text{rad} = 25\pi \rightarrow \text{rad} = \frac{25\pi}{34}$$

$$\text{ج) } \frac{5\pi}{12} = \frac{D}{180} \rightarrow 180(\omega) = D \times 12 \rightarrow D = 75^\circ$$

$$\text{د) } \frac{\pi}{9} = \frac{D}{180} \rightarrow 180(f) = 9D \rightarrow D = 20^\circ$$

$$\frac{125a}{9} = \frac{D}{180} \rightarrow 180D = 1250a \rightarrow D = 1250a^\circ$$

$$\frac{a\pi}{\pi} = \frac{D}{180} \rightarrow 180 = 180a^\circ$$

$$225a^\circ + 125a^\circ + 10a^\circ = 180^\circ$$

$$360a = 180 \rightarrow a = \frac{1}{2}$$

$$\text{الف) } \frac{1}{p} \times \frac{\sqrt{3}}{p} - \frac{\sqrt{3}}{p} \times \frac{1}{p} = -1 + 2 = 1$$

$$\text{ب) } \frac{\left(\frac{1}{\sqrt{3}}\right)^2 + 1 + (\sqrt{3})^2}{\sqrt{3} - \frac{1}{\sqrt{3}}} = \frac{\frac{1}{3} + 1 + 3}{\frac{3-1}{\sqrt{3}}} = \frac{\frac{4}{3}}{\frac{2}{\sqrt{3}}} = \frac{13\sqrt{3}}{4}$$

$$-\frac{1}{p} \times \frac{1}{p} + \frac{\sqrt{3}}{p} \times \frac{\sqrt{3}}{p} = -\frac{1}{p^2} + \frac{3}{p^2} = \frac{2}{p^2} = \left(\frac{1}{p}\right)^2 \rightarrow \sin^2 \theta$$

$$1 + \cot^2 \theta = \frac{1}{\sin^2 \theta} \rightarrow 1 + \cot^2 \theta = \frac{1}{\frac{1}{p^2}} \rightarrow \cot^2 \theta = 1$$

$$\begin{aligned} \cot \theta &= 1 \\ \tan \theta &= 1 \end{aligned}$$

$$\frac{2\left(\frac{1}{\sqrt{3}}\right)\left(1 - \frac{1}{\sqrt{3}}\right)}{\left(1 - \frac{1}{\sqrt{3}}\right)^2} = \frac{\frac{2}{\sqrt{3}}}{\frac{4}{9}} = \frac{9}{2\sqrt{3}} = \frac{3}{2} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{2} = \sqrt{3} \tan \theta$$

$$\left(\frac{\pi}{3}\right) = 60^\circ = \theta$$

$$\frac{4}{180} = \frac{2\pi}{\pi} = \pi \times 2\pi$$

$$\rightarrow n = \frac{\pi}{\mu}$$

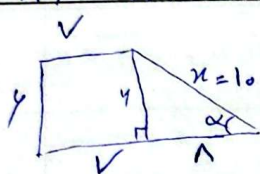
$$\frac{1 + \tan^2 \theta}{24} = \frac{1}{\cos^2 \theta} \rightarrow \cos^2 \theta = \frac{1}{24} \rightarrow \cos \theta \rightarrow \pm \frac{1}{\sqrt{24}}$$

$$\cos^2 \theta + \sin^2 \theta = 1 \rightarrow \sin^2 \theta = \frac{23}{24} \rightarrow \sin \theta \rightarrow \pm \frac{\sqrt{23}}{\sqrt{24}}$$

$$\frac{\frac{1}{\sqrt{24}}}{\frac{\sqrt{23}}{\sqrt{24}}} = \frac{\frac{1}{\sqrt{24}}}{\frac{\sqrt{23}}{\sqrt{24}}} = \frac{1}{\sqrt{23}} = \boxed{\frac{1}{\sqrt{23}}}$$

به دلیل اینکه $\tan \theta$ است پس باید هم $\cos \theta$ و هم $\sin \theta$ مثبت بگیریم و یا هر دو را منفی در نظر بگیریم.

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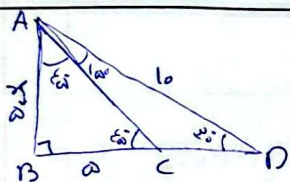
$$\sin \alpha = \frac{4}{10}$$

$$\sin \alpha = \frac{4}{10} \rightarrow \frac{4}{10} = \frac{4}{10} \rightarrow \boxed{10}$$

$$10^2 - 4^2 = 44 \rightarrow \sqrt{44} = 8$$

$$\underline{31} \rightarrow 10 + 8 + 4 + 10 = \boxed{31}$$

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$$\sin \beta = \frac{x}{10} = \frac{1}{2} \rightarrow x = 5$$

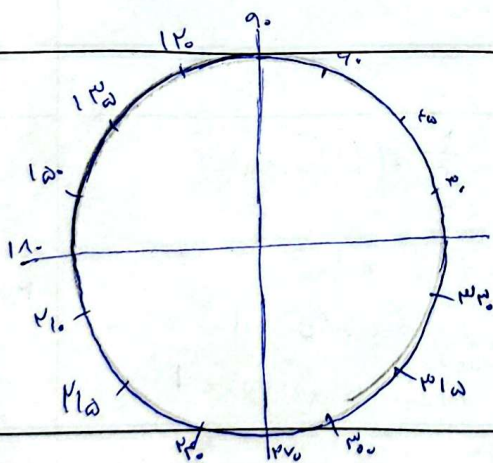
$$10^2 - 5^2 = BD^2 \rightarrow 75 \rightarrow BD = \sqrt{75}$$

$$CD = BD - BC$$

$$\sqrt{75} - 4$$

$$\rightarrow 4(\sqrt{3} - 1)$$

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الف) ناحیه یک
ب) ناحیه دو
ج) ناحیه سه
د) ناحیه چهار

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$$\tan x = \frac{1}{\sqrt{3}} \rightarrow \cot x = \sqrt{3}$$

$$1 + \cot^2 x = \frac{1}{\sin^2 x}$$

$$1 + 3 = \frac{1}{\sin^2 x} \rightarrow \sin^2 x = \frac{1}{4} \rightarrow \sin x = \pm \frac{1}{2}$$

$$\boxed{\sin x = -\frac{1}{2}}$$

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