

الف) $120^\circ = (x) \text{ Rad} \rightarrow x = \frac{120\pi}{180} \text{ Rad}$ ✓

ب) $115^\circ = (x) \text{ Rad} \rightarrow x = \frac{115\pi}{180} \text{ Rad}$ ✓

ج) $\frac{5\pi}{12} \text{ Rad} = (x)^\circ \rightarrow x = 75^\circ$ ✓

د) $\frac{5\pi}{9} \text{ Rad} = (x)^\circ \rightarrow x = 100^\circ$ ✓

$\frac{120a}{9} = \frac{D}{110} \rightarrow \frac{5a}{12} = \frac{D}{110} = 120a$ ✓

$\frac{a\pi}{1} = \frac{a\pi}{1\pi} = \frac{a}{1} = \frac{D}{110} \rightarrow D = 110a$ ✓
 $120a + 120a + 10a = 80a$
 $80a = 110^\circ \rightarrow a = 1.375^\circ$ ✓

الف) $\cos 40^\circ \cos 30^\circ - \sin 40^\circ \sin 30^\circ - \tan 40^\circ + \cot 40^\circ =$
 $\frac{1}{2} \times \frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{2} \times \frac{1}{2} - 1 + 1 = 0$ ✓

ب) $\frac{\tan^2 30^\circ + \tan^2 45^\circ + \tan^2 60^\circ}{\cot^2 30^\circ - \cot^2 45^\circ} = \frac{\frac{1}{3} + 1 + 3}{\sqrt{3} - \frac{1}{\sqrt{3}}} = \frac{1+3+9}{\frac{3}{\sqrt{3}}} = \frac{13}{\sqrt{3}} = \frac{13\sqrt{3}}{3}$ ✓

$-\sin 30^\circ \cos 40^\circ + \cos 30^\circ \sin 40^\circ = \sin^2 \theta$
 $-\frac{1}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2}$

$\sin \theta = \frac{1}{\sqrt{2}}$ و $\cos = \pm \frac{1}{\sqrt{2}}$

$-\frac{1}{4} + \frac{3}{4} = \frac{2}{4} = \frac{1}{2} = \sin^2 \theta \rightarrow \sin^2 \theta + \cos^2 \theta = 1 \rightarrow \frac{1}{2} + \cos^2 \theta = 1 \rightarrow \cos^2 \theta = \frac{1}{2}$

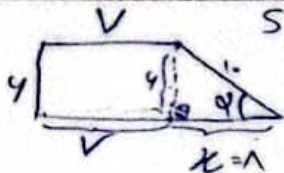
$\tan \theta = \frac{\sin}{\cos} = +1$ ✓
 چون زاویه حاده است فقط مثبت جواب است

$\frac{r \tan 30^\circ (1 - \tan^2 30^\circ)}{(1 - \cot^2 40^\circ)^2} = \frac{r \times \frac{1}{\sqrt{3}} (1 - \frac{1}{3})}{(\frac{2}{\sqrt{3}})^2} = \frac{r \times \frac{2}{3}}{\frac{4}{3}} = \frac{r}{2} = \frac{r\sqrt{3}}{2\sqrt{3}} = \frac{r}{2}$ ✓

$\rightarrow \tan \theta = \sqrt{3} \rightarrow 1 + \tan^2 = \frac{1}{\cos^2} \rightarrow 4 = \frac{1}{\cos^2} \rightarrow \cos = \frac{1}{2}$
 $1 + \cot^2 = \frac{1}{\sin^2} \rightarrow \frac{4}{3} = \frac{1}{\sin^2} \rightarrow \sin = \frac{\sqrt{3}}{2}$
 $\frac{40^\circ}{180^\circ} \pi = \frac{2\pi}{3}$ ✓

$$\frac{\mu \sin \theta - \cos \theta}{\sin \theta - \epsilon \cos \theta} = ? \quad \text{and} \quad \tan \theta = a \rightarrow \frac{\sin \theta}{\cos \theta} = a \rightarrow \sin \theta = a \cos \theta$$

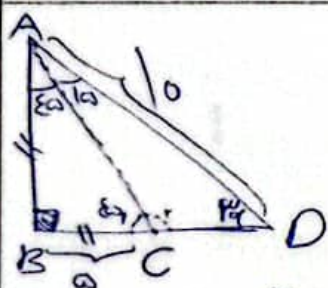
$$\rightarrow \frac{r(\omega \cos \theta) - \cos \theta}{\omega \cos \theta - \varepsilon \cos \theta} = \frac{1 \cos \theta - \cos \theta}{\cos \theta} = \frac{1 \varepsilon \cos \theta}{\cos \theta} = 1 \varepsilon \quad \checkmark$$



$$\sin \alpha = \frac{6}{10} \rightarrow \frac{\text{ضلع مقابل}}{\text{وتر}} = \frac{6}{10} \rightarrow \text{وتر} = 10$$

$$x^r + y^r = 10^r \rightarrow x^r = \frac{10^r - y^r}{2}$$

$$P_{\text{res}} = 9 + V_1 + 1 + 0 + V_2 = \boxed{10} \quad \checkmark$$



$$C_1 = 90^\circ - \varepsilon a^\circ = \varepsilon a^\circ$$

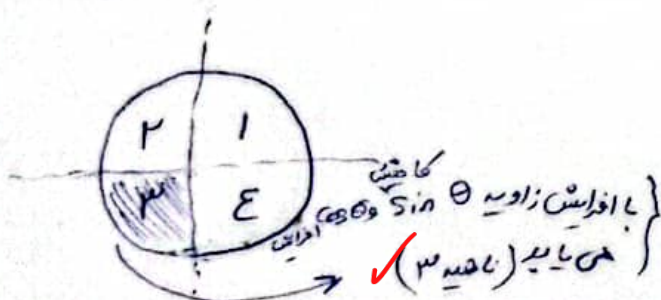
$D = (90 + 40) = 130$ $110 - 130 = 20$ $\left. \begin{array}{l} \text{در مثل قائم الزاویه} \\ \text{با وتر 130 و یک ضلع 110} \end{array} \right\} \rightarrow AD = 10 \rightarrow AB = 20$

$$BC = AB \rightarrow BC = a$$

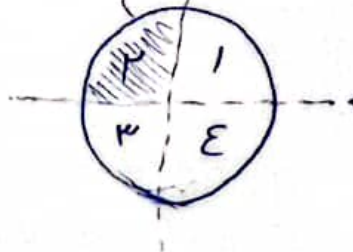
$$AD^r = AB^r + BD^r \rightarrow 100 = 20 + BD^r \rightarrow BD = \sqrt{100} = 10 \sqrt{1} \rightarrow CD = BD - BC$$

$$10\sqrt{1} - 20 = 10(\sqrt{1} - 1) \rightarrow -10$$

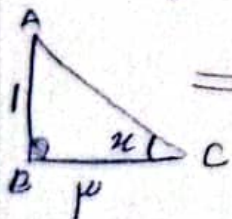
(الف)



ب) اگر اس زاویہ θ میں $\sin$ و $\cos$ زاویہ کا حست متبادل (تبادلہ) ہے۔



$$\tan x = \frac{1}{r} \rightarrow \frac{\text{ضلع مقابلہ}}{\text{ضلع مجاورہ}} \rightarrow$$



$$\Rightarrow AC^2 = 1^2 + 3^2 = 10 \rightarrow AC = \sqrt{10} \rightarrow$$

$\sin x = \frac{-1}{\sqrt{10}}$ ✓ چون در ربع سوم است