

الف) $2\sqrt{2} = (x) \text{ rad} \rightarrow 2\sqrt{2} \times \frac{\pi}{180} = \frac{2\sqrt{2}\pi}{180}$

ب) $135 = (x) \text{ rad} \rightarrow 135 \times \frac{\pi}{180} = \frac{135\pi}{180}$

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

د) $\frac{8\pi}{9} \text{ rad} \rightarrow \frac{8\pi}{9} \times \frac{180}{\pi} = 160^\circ$

با a $\frac{180a}{9} \times \frac{180}{\pi} = \frac{100a}{1} = \frac{180a}{2}$

$\frac{180a}{2} + \frac{180a}{2} + 60a = 180^\circ$

$\frac{a\pi}{9} \times \frac{180}{\pi} = \frac{20a}{2}$

$180a + 180a = 180^\circ$

$180a = 180^\circ$

$a = 1^\circ$

الف) $\cos 40^\circ \cos 30^\circ - \sin 40^\circ \sin 30^\circ - \tan 40^\circ + \cot 40^\circ =$

$\sin 40^\circ = \cos 50^\circ$ $\sin 30^\circ \times \cos 40^\circ - \cos 30^\circ \times \sin 40^\circ - 1 + 1 = 1$

$\sin 40^\circ = \cos 50^\circ$

$\tan 40^\circ = 1$

$\cot 40^\circ = 1$

ب) $\frac{\tan^2 30^\circ + \tan^2 45^\circ + \tan^2 60^\circ}{\cot^2 30^\circ - \cot^2 45^\circ} = \frac{\tan^2 30^\circ + \cot^2 30^\circ + 1}{\cot^2 30^\circ - \tan^2 30^\circ}$

$\tan^2 30^\circ = \cot^2 60^\circ$

$\tan^2 45^\circ = \cot^2 45^\circ$

$\tan^2 60^\circ = 1$

$3 = \frac{\sqrt{3}}{1}$

$(\frac{1}{\sqrt{3}})^2 + (\sqrt{3})^2 + 1$

$\sqrt{3} - \frac{1}{\sqrt{3}}$

$\frac{\sqrt{3}\sqrt{3}}{\sqrt{3}} - \frac{\sqrt{3}}{\sqrt{3}}$

$\frac{1}{3} + 3 + 1 = \frac{13}{3}$

$\frac{13}{3} \div \frac{\sqrt{3}}{\sqrt{3}} = \frac{13\sqrt{3}}{3}$

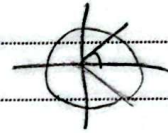
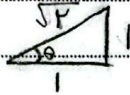
Arman

$$-\sin 30^\circ \cos 40^\circ + \cos 30^\circ \sin 40^\circ = \sin \theta$$

$$-\sin 30^\circ \times \sin 40^\circ + \cos 30^\circ \times \cos 40^\circ = \cos^2 30^\circ - \sin^2 40^\circ \Rightarrow \frac{3}{4} - \frac{1}{4} = \frac{1}{2}$$

$$\frac{1}{2} = \sin \theta \Rightarrow + \frac{1}{\sqrt{2}} = \sin \theta$$

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



$$\frac{2 \tan 30^\circ (1 - \tan^2 30^\circ)}{(1 - \cot^2 40^\circ)^2} = \tan \theta$$

$$2 \times \frac{1}{\sqrt{3}} \times \left(1 - \frac{1}{3}\right) = \frac{2}{3\sqrt{3}} \leftarrow \text{صورت}$$

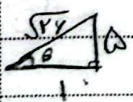
$$\left(1 - \frac{1}{3}\right)^2 = \frac{4}{9} \leftarrow \text{مقام}$$

$$\frac{\frac{2}{3\sqrt{3}}}{\frac{4}{9}} = \frac{2}{\sqrt{3}} \Rightarrow \sqrt{3} = \tan \theta$$

$$\frac{1}{2} \times \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}}$$

$$40^\circ \approx 41^\circ$$

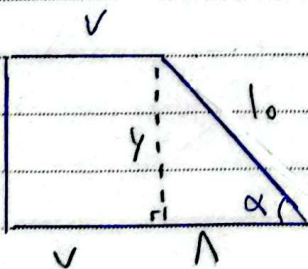
$$\tan \theta = 2$$



$$\sin \theta = \frac{2}{\sqrt{5}}$$

$$\cos \theta = \frac{1}{\sqrt{5}}$$

$$\frac{2 \sin \theta \cos \theta}{\sin \theta - \cos \theta} = \frac{\frac{2}{\sqrt{5}} \cdot \frac{1}{\sqrt{5}}}{\frac{2}{\sqrt{5}} - \frac{1}{\sqrt{5}}} = \frac{\frac{2}{5}}{\frac{1}{\sqrt{5}}} = \frac{2}{\sqrt{5}} \cdot \frac{\sqrt{5}}{1} = 2$$



$$\sin \alpha = \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}}$$

$$V + 4 + (V + 1) + 10 = 24$$

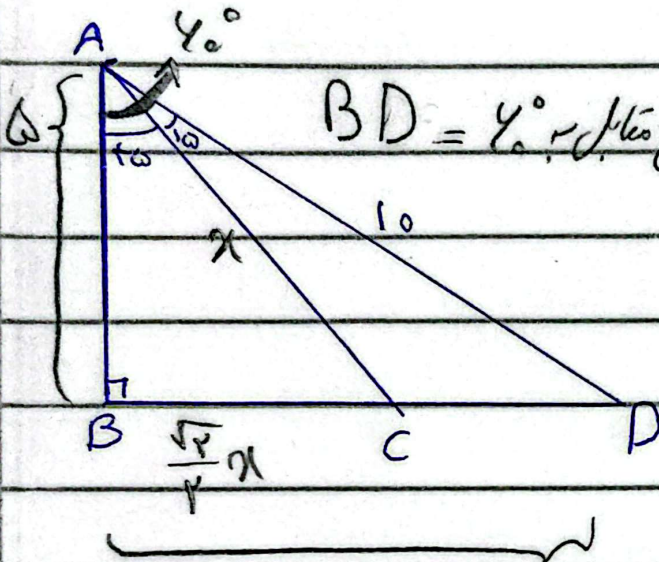
$$\sin \alpha = \frac{1}{\sqrt{2}}$$

زهراسادات صبی

Subject:

Date:

(A)



$$BD = 40^\circ \text{ رقیب } = \frac{\sqrt{3}}{2} \times \text{وتر}$$

$$BD = \frac{\sqrt{3}}{2} \times 10 = 5\sqrt{3}$$

$$5\sqrt{3} \quad \text{فیثاغورس} \quad \Delta ABD = (10)^2 - (5\sqrt{3})^2 = AB^2$$

$$100 - 75 = 25 \rightarrow \boxed{AB = 5}$$

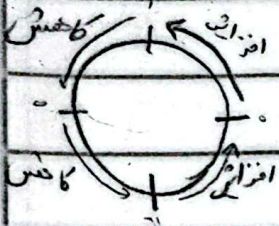
$$\text{فیثاغورس} \rightarrow \Delta ABC \rightarrow x^2 - \left(\frac{\sqrt{2}}{2}x\right)^2 = (5)^2$$

$$x^2 - \frac{1}{2}x^2 = 25 \rightarrow \frac{1}{2}x^2 = 25 \rightarrow x^2 = 50 \rightarrow \boxed{x = 5\sqrt{2}}$$

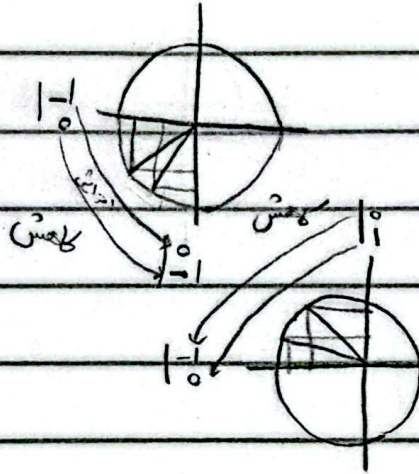
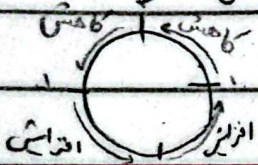
$$BD = BC + CD \rightarrow 5\sqrt{3} - \left(\frac{\sqrt{2}}{2} \times 5\sqrt{2}\right) = CD \rightarrow$$

$$\boxed{5\sqrt{3} - 5 = CD} = 3.44 \dots$$

برای Sin



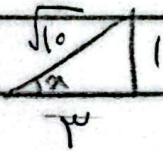
برای Cos



الف) در ناصیه سوم

ب) در ناصیه دوم

Tan $\alpha = \frac{1}{3}$



$$\sin \alpha = \frac{\text{مقابل}}{\text{وتر}} = \frac{1}{\sqrt{10}}$$

در ناصیه سوم Sin منفی است پس

$$\sin \alpha = -\frac{1}{\sqrt{10}}$$