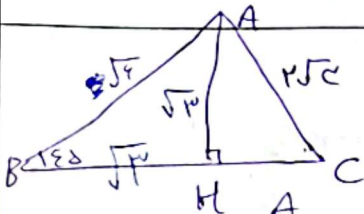


$$(\sin 15^\circ + \sin 75^\circ)(\cos 15^\circ - \cos 75^\circ) = \left(\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{2}}{2}\right)\right)\left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right)$$

$$= \frac{\sqrt{2}-\sqrt{2}}{2} \times \frac{\sqrt{2}+\sqrt{2}}{2} = -\frac{2-2}{2} = \frac{1}{2}$$

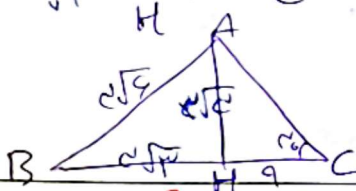
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$$\frac{1 + \tan^2 45^\circ}{\varepsilon \cos^2 45^\circ + 2 \cos^2 22.5^\circ} = \frac{2 \times \left(\frac{\sqrt{2}}{2}\right)^2 \times 2 + 1}{\varepsilon \times \left(\frac{\sqrt{2}}{2}\right)^2 + 2 \times \frac{\sqrt{2}}{2}} = \frac{1+1}{2+1} = \frac{1}{1}$$

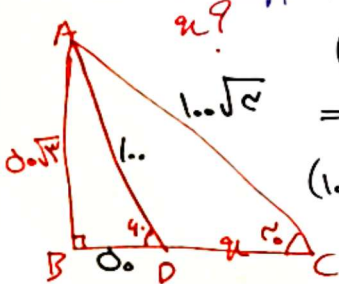


$$\sqrt{2}^2 + HC^2 = 12 \rightarrow HC^2 = 9 \rightarrow HC = 3$$

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$$AH = BH \rightarrow B = 45^\circ$$



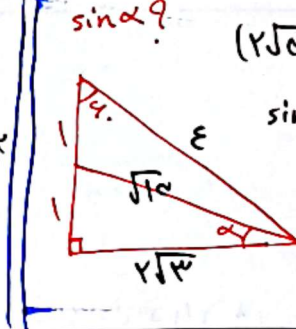
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$$(\delta \cdot \sqrt{2})^2 + BD^2 = 1 \dots$$

$$\Rightarrow BD = \delta$$

$$(1 \cdot \sqrt{2})^2 = (\delta \cdot \sqrt{2})^2 + (\delta + \delta)^2$$

$$\rightarrow \delta = 1/2$$



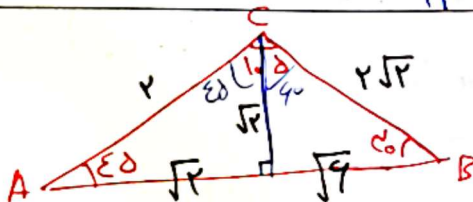
sin alpha?

$$(2\sqrt{2})^2 + 1^2 = 17$$

$$\sin \alpha = \frac{1}{\sqrt{17}} = \frac{\sqrt{17}}{17}$$

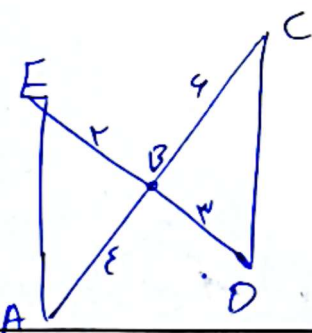
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$\frac{AB}{AC}$ ؟



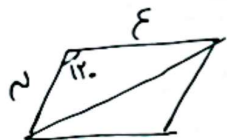
$$\Rightarrow \frac{AB}{AC} = \frac{\sqrt{2} + \sqrt{2}}{2}$$

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$$\frac{S_{ARE}}{S_{BCD}} = \frac{\frac{1}{2} \times 2 \times 2 \times \sin 45^\circ}{\frac{1}{2} \times 2 \times 2 \times \sin 45^\circ} = \frac{2}{2}$$

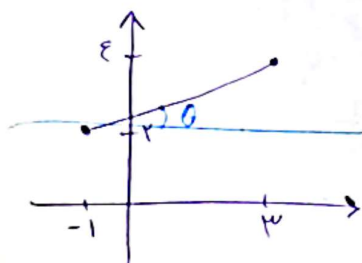
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$$S = 2 \times \frac{1}{2} \times \frac{2}{\sqrt{3}} \times \sin 120^\circ = \sqrt{3}$$



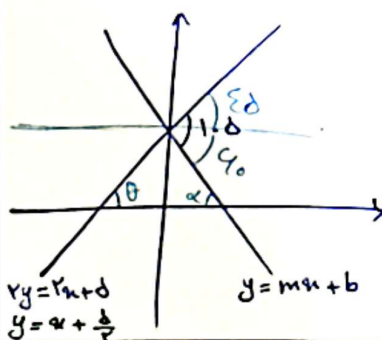
$$S = \frac{1}{2} \times 1 \times 1 \times \sin 120^\circ = \frac{\sqrt{3}}{2}$$



$$\frac{\Delta y}{\Delta x} = \frac{1}{1} = 1 \rightarrow \tan \theta = 1$$

$$\frac{\sin \theta}{\cos \theta} = 1 \rightarrow \frac{\sin^2 \theta}{\cos^2 \theta} = 1 \rightarrow \sin^2 \theta = \cos^2 \theta$$

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



$$y = x + \frac{1}{2} \Rightarrow b = \frac{1}{2}$$

$$\tan \theta = 1 \rightarrow \theta = 45^\circ \rightarrow \alpha = 45^\circ \rightarrow \tan 45^\circ = 1$$

$$\Rightarrow m = -1$$

$$\Rightarrow mb = -1 \times \frac{1}{2} = -\frac{1}{2}$$

$$f(x) = \cos(\pi + x) + \sin(\frac{\pi}{2} + x) - \tan(\frac{\pi}{4} + x)$$

$$f(x) = -\cos x + \cos x + \cot x = \cot x$$

$$\rightarrow f\left(\frac{\pi}{4}\right) = f(45^\circ) = \cot 45^\circ = 1$$

$$\frac{\sin\left(\frac{11\pi}{4} + x\right) + \cos\left(\frac{13\pi}{4} - x\right)}{\cos(9\pi + x) - \sin(4\pi - x)} = \frac{\sin\left(\frac{3\pi}{4} + x\right) + \cos\left(\frac{5\pi}{4} - x\right)}{\cos(\pi + x) - \sin(-x)}$$

$$= \frac{\cos x - \sin x}{-\cos x + \sin x} = -1$$