

$$\left(\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}\right) \left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right) = \frac{2}{2} - \frac{2}{2} = -\frac{1}{2}$$

$$\frac{2}{2+1} = \frac{1}{2}$$

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الف) $AH = \frac{2}{\sqrt{2}} \times \sqrt{2} = \sqrt{2}$

$$AC \times \sin C = AH \Rightarrow \sin C = \frac{AH}{AC} = \frac{1}{2}$$

$$\Rightarrow \cos C = \frac{\sqrt{3}}{2} \Rightarrow CH = AC \times \cos C = 2 \times \frac{\sqrt{3}}{2} = \sqrt{3}$$

ب) $\cos C = \frac{\sqrt{3}}{2} \Rightarrow \frac{1}{AC} = \frac{\sqrt{3}}{2} \Rightarrow AC = \frac{2}{\sqrt{3}}$

$$\sin C = \frac{AH}{\frac{2}{\sqrt{3}}} = \frac{1}{2} \Rightarrow AH = \frac{1}{\sqrt{3}}$$

$$\frac{2\sqrt{3}}{2\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3} \Rightarrow \underline{B = 60^\circ}$$

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الف) $\tan 45^\circ = \sqrt{2} = \frac{d \cdot \sqrt{2}}{BD} \Rightarrow BD = d$

$$\tan 45^\circ = \frac{\sqrt{2}}{2} = \frac{d \cdot \sqrt{2}}{d \cdot x} \Rightarrow d \cdot \sqrt{2} + \sqrt{2} x = d \cdot \sqrt{2}$$

$$\Rightarrow x = 100$$

ب) $\cos 45^\circ = \frac{1}{2} = \frac{2}{AC} \Rightarrow AC = 4$

$$\sin 45^\circ = \frac{\sqrt{2}}{2} = \frac{2\sqrt{2}}{BC} \Rightarrow BC = 4$$

$$\sqrt{(2\sqrt{2})^2 + 4^2} = \sqrt{CD} = 2\sqrt{CD} = \sqrt{20}$$

$$\Rightarrow \sin \alpha = \frac{\sqrt{20}}{12}$$

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$$\sin 10^\circ = \frac{1 + \cos 20^\circ}{2} \Rightarrow \sin 10^\circ = \frac{1 - \frac{\sqrt{3}}{2}}{2} = \frac{2 - \sqrt{3}}{4}$$

$$\frac{c}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{c}{b} = \frac{\sin A}{\sin B} = \frac{1 - \frac{\sqrt{3}}{2}}{\frac{\sqrt{3}}{2}} = \frac{2 - \sqrt{3}}{\sqrt{3}}$$

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$$\frac{S_{BCD}}{S_{ABE}} = \frac{\frac{1}{2} \times \sqrt{2} \times \sqrt{2} \times \sin B_1}{\frac{1}{2} \times 1 \times 1 \times \sin B_1} = \frac{2}{1}$$

$$\Rightarrow \frac{S_{ABE}}{S_{BCD}} = \frac{1}{2}$$

$$\begin{matrix} \wedge & \wedge \\ B_1 & B_2 \\ \Rightarrow \sin B_1 & = \sin B_2 \end{matrix}$$

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الف) $\frac{1}{2} \times c_x \times c_x \sin 120^\circ$

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

$c\sqrt{3} \times c = \underline{\underline{c^2\sqrt{3}}}$

ب) $\frac{1}{2} \times c_x \times c_x \sin 120^\circ$

$= \frac{1}{2} \times c_x \times c_x \frac{\sqrt{3}}{2} = \underline{\underline{c^2\sqrt{3}}}$

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میبند $= \frac{c-2}{c-(-1)} = \frac{1}{2} = \tan \theta \Rightarrow \frac{\sin \theta}{\cos \theta} = \frac{1}{2} \Rightarrow \sin \theta = \cos \theta \Rightarrow \sin \theta = \cos \theta$

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

$\Rightarrow \cos \theta = \underline{\underline{\frac{\sqrt{2}}{2}}}$

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$y = x + d \Rightarrow y = x + \frac{d}{\sin \theta} \Rightarrow$ زاویه θ با محور x $\Rightarrow$ $\sin \theta = \frac{d}{y}$

$\Rightarrow b = \frac{d}{\sin \theta}$ $\left\{ \begin{array}{l} y = -\sqrt{2}x + \frac{d}{\sin \theta} \Rightarrow m \times b = \frac{-d\sqrt{2}}{2} \\ \tan 135^\circ = -\sqrt{2} \end{array} \right.$

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

$-(-\cot x) = \cot x \Rightarrow \underline{\underline{f(\frac{4\pi}{9}) = \cot(\frac{4\pi}{9}) = -\sqrt{3}}}$

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$\frac{\sin(\frac{\pi}{2} + x) + \cos(\frac{\pi}{2} - x)}{\cos(\pi + x) - \sin(\frac{3\pi}{2} - x)} = \frac{\cos x - \sin x}{-\cos x - (-\sin x)} = \frac{\cos x - \sin x}{-\cos x - \sin x} = -1$

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