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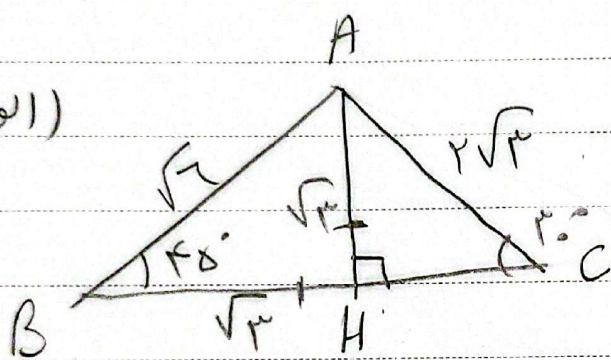
①

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

$$\frac{1 + 2 \times \frac{1}{2}}{2 \times \frac{2}{4} + 2 \times \frac{2}{4}} = \frac{1+1}{2+1} = \frac{2}{3} = \frac{1}{\frac{3}{2}}$$

②

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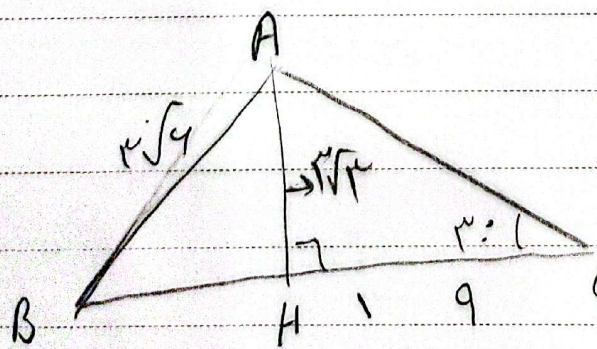


$$\sin C = \frac{\sqrt{2}}{2\sqrt{2}} = \frac{1}{2} \Rightarrow C = 30^\circ$$

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

$$H \cos C = \frac{CH}{AC}$$

$$\frac{\sqrt{2}}{2} = \frac{CH}{2\sqrt{2}} \Rightarrow CH = 2$$



$$\cot C = \sqrt{2}$$

$$\cot C = \frac{CH}{AH}$$

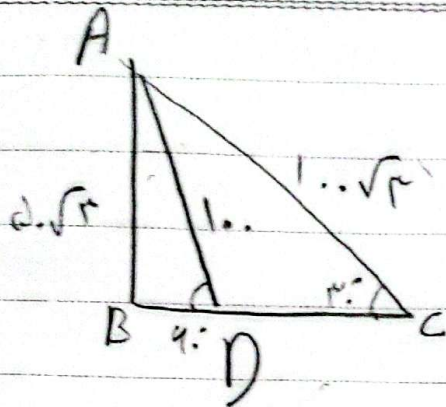
$$\sin B = \frac{2\sqrt{2}}{2\sqrt{4}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \Rightarrow B = 45^\circ$$

$$\sqrt{2} = \frac{9}{AH} \Rightarrow AH = \frac{9}{\sqrt{2}}$$



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(الف) (3)

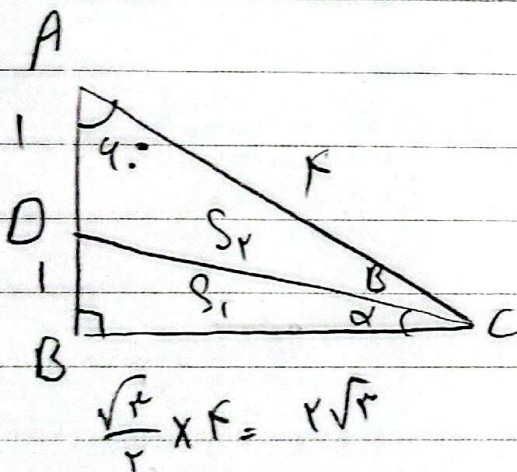
$$CB = \frac{\sqrt{2}}{1} \times \frac{1}{\sqrt{2}} = 1.2$$

$$BD = 2.$$

$$\frac{\sqrt{2}}{2} \times AD = 2 \cdot \sqrt{2}$$

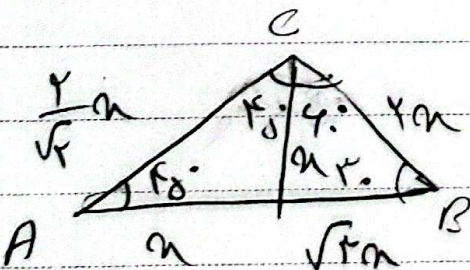
$$AD = 1.$$

$$CD = 1.$$



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

$$CD = \sqrt{1^2 + 1} = \sqrt{2}$$



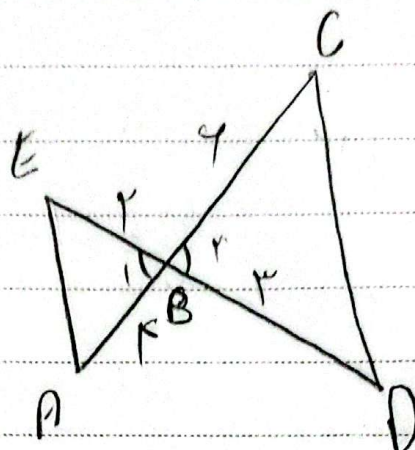
$$\frac{1 + \sqrt{2}}{\frac{\sqrt{2}}{2}} = \frac{(1 + \sqrt{2}) \times 2}{\sqrt{2}}$$

$$\frac{1 + \sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2} + \sqrt{4}}{2}$$

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$$\frac{S_{ABE}}{S_{BCD}} = \left(\frac{r}{R} \right)^2$$



(3)

$$\frac{AO}{OC} = \frac{EO}{DO} = \frac{r}{R}$$

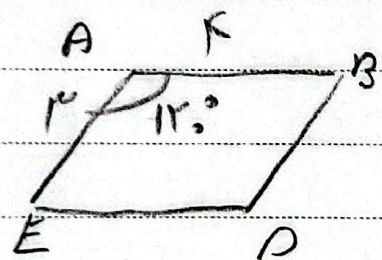
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$$\triangle EBA \sim \triangle CDB$$

$$\hat{B}_1 = \hat{B}_2$$

$$K = \frac{r}{R}$$

و 1)



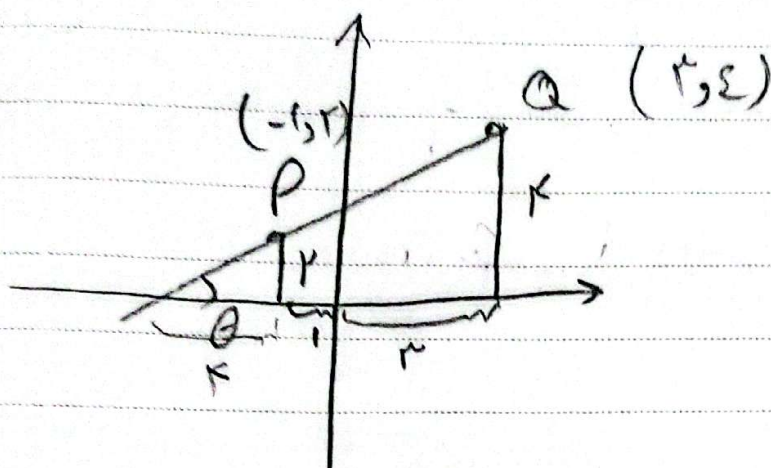
$$S_{ABDE} = AB \cdot BE \cdot \sin \alpha$$

$$r \cdot R \cdot \frac{\sqrt{r}}{r} = \sqrt{r} R$$

$$S = \frac{1}{2} \sin \alpha a b = \frac{1}{2} \times \cancel{R} \times r \times \frac{\sqrt{r}}{r} = \sqrt{r} R$$

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

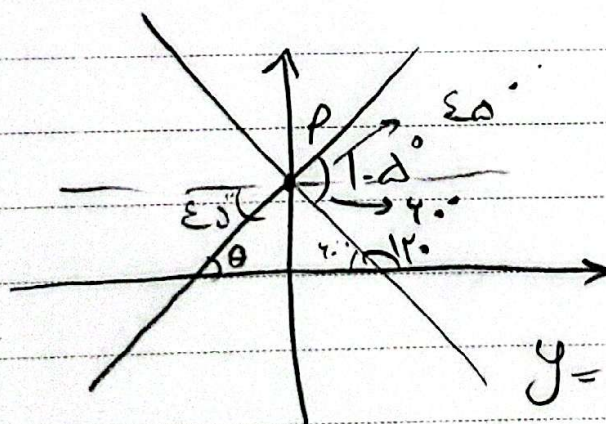
$$r = \epsilon + r$$

$$r = \epsilon$$

$$\tan \theta = \frac{r}{r} = 1 \Rightarrow \tan \theta + 1 = \frac{1}{\cos \theta}$$

$$\frac{1}{\epsilon} + 1 = \frac{1}{\cos \theta}$$

$$\frac{1}{\epsilon} = \frac{1}{\cos \theta} \Rightarrow \cos \theta = \frac{r\sqrt{a}}{\epsilon}$$



$$P = (1, r) \Rightarrow$$

$$b = r$$

$$y = mx + b$$

$$y = rx + r$$

$$m = \tan \theta = -\sqrt{r}$$

$$\tan \theta = 1 \Rightarrow \theta = 45^\circ$$

$$mb, \frac{1}{r}x - \sqrt{r} = \frac{-2\sqrt{r}}{r}$$



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(4)

$$f(x) = \cos(\pi + x) + \sin\left(\frac{\pi}{r} - x\right) - \tan\left(\frac{r\pi}{r} + x\right)$$

$$f(x) = -\cos x + \sin x + 0 + \tan x$$

$$f\left(\frac{2\pi}{4}\right) = 0 + \left(\frac{2\pi}{4}\right) = -\sqrt{r}$$

$$\cos x - \sin x$$

(1.)

$$\sin\left(\frac{14\pi}{r} + x\right) + \cos\left(\frac{10\pi}{r} - x\right)$$

$$\frac{\cos(\pi + \pi) - \sin(4\pi - x)}{-\cos x + \sin x} = -1$$