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$$(\sin 135^\circ + \sin 45^\circ)(\cos 135^\circ - \cos 45^\circ) =$$

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

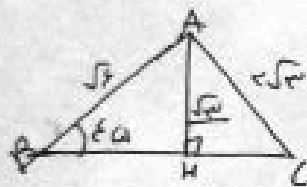
$$\tan 45^\circ = \frac{\sqrt{2}}{2} = \tan 135^\circ \quad \left(\frac{\sqrt{2}}{2}\right)^2 = \frac{2}{4} = \frac{1}{2} \rightarrow 1 + 2 \times \frac{1}{2} = 2$$

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$$\frac{2 \tan^2 45^\circ}{2 \cos^2 45^\circ + 2 \cos^2 135^\circ} = \frac{2}{2} = \boxed{\frac{1}{2}}$$

$$2(2 \cos^2 45^\circ + 2 \cos^2 135^\circ) =$$

$$\left. \begin{aligned} \cos 45^\circ = \frac{\sqrt{2}}{2} &= \cos 135^\circ = \left(\frac{\sqrt{2}}{2}\right)^2 = \frac{2}{4} \\ \cos 135^\circ = -\frac{\sqrt{2}}{2} &= \cos 45^\circ = \frac{1}{2} \end{aligned} \right\} \rightarrow 2\left(\frac{2}{4} + \frac{1}{2}\right) = 2$$

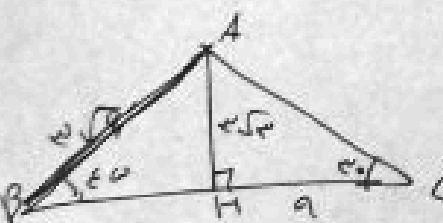


$$\rightarrow (\sqrt{2})^2 = (\sqrt{2})^2 + 2^2 \quad \boxed{H=90^\circ}$$

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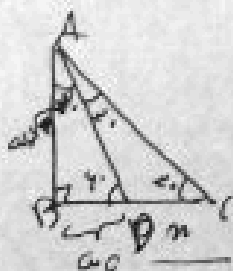
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$$\sin = \frac{\text{مقابل}}{\text{فرض}} \quad \sin 45^\circ = \frac{\sqrt{2}}{2} \rightarrow \frac{\sqrt{2}}{2} = \frac{x}{\sqrt{2}} \rightarrow x = \frac{\sqrt{2} \times \sqrt{2}}{2} = \frac{2}{2} = 1$$



$$\sin \theta = \frac{AB}{AC} = \frac{\sqrt{2}}{\sqrt{2}} = 1 \rightarrow \theta = 90^\circ$$

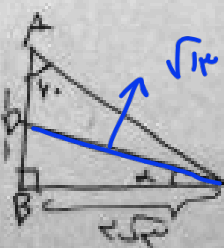
$$\tan = \frac{\sin}{\cos} = \frac{\text{مقابل}}{\text{جوار}} \quad \tan 45^\circ = \frac{\sqrt{2}}{2} = \frac{x}{2} \rightarrow x = \frac{2 \times \sqrt{2}}{2} = \sqrt{2}$$



$$\tan 45^\circ = \frac{\sqrt{2}}{2} = \frac{\text{مقابل}}{\text{جوار}} = \frac{BP}{2\sqrt{2}} \rightarrow BP = \sqrt{2}$$

$$\tan 45^\circ = \frac{\sqrt{2}}{2} = \frac{\text{مقابل}}{\text{جوار}} = \frac{BC}{2\sqrt{2}} \rightarrow BC = \sqrt{2}$$

$$\boxed{\theta = 10^\circ}$$



$$\tan 45^\circ = \frac{\text{مقابل}}{\text{جوار}} = \frac{BC}{2} = \frac{\sqrt{2}}{1} \rightarrow BC = \sqrt{2}$$

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

$$\sin \alpha = \frac{\text{مقابل}}{\text{فرض}} = \frac{\sqrt{17}}{17}$$

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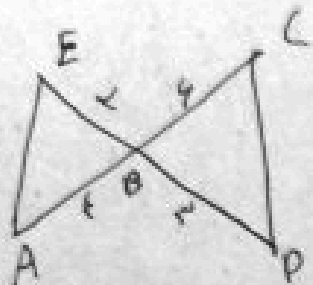


$$\frac{AB}{AC} = ?$$

$$\frac{\sqrt{4+4\sqrt{4}}}{r}$$

$$\sin 40^\circ = \sin(90^\circ - 50^\circ) = \sin 50^\circ \cos 40^\circ + \cos 50^\circ \sin 40^\circ = \frac{\sqrt{4+4\sqrt{4}}}{r}$$

$$\frac{AB}{\sin C} = \frac{AC}{\sin B} \rightarrow \sin C \times AC = \sin B \times AB \rightarrow \frac{\sin C}{\sin B} = \frac{AB}{AC} = \frac{\sin 40^\circ}{\sin 50^\circ}$$



$$\frac{S_{ABE}}{S_{BCD}} = ?$$

$$\frac{\frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta}{\frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta} = \frac{q}{r}$$

$$\frac{\frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta}{\frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta} = \frac{q}{r}$$

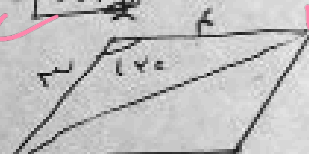
$$S_{ABE} = \frac{1}{2} \times BE \times AE \times \sin \theta$$

(این به یکس برابریه
مساوی می شود)



r =

$$\frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta = \frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta$$



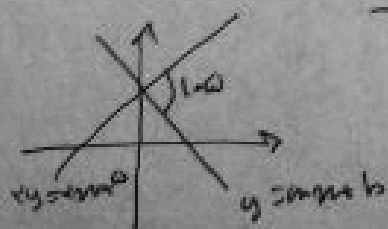
$$\frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta = \frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta$$

$$\frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta = \frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta$$

$$\tan \theta = \frac{op}{ad} = \frac{\frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta}{\frac{1}{2} \times \frac{1}{r} \times \frac{1}{q} \times \sin \theta} = \frac{q}{r}$$

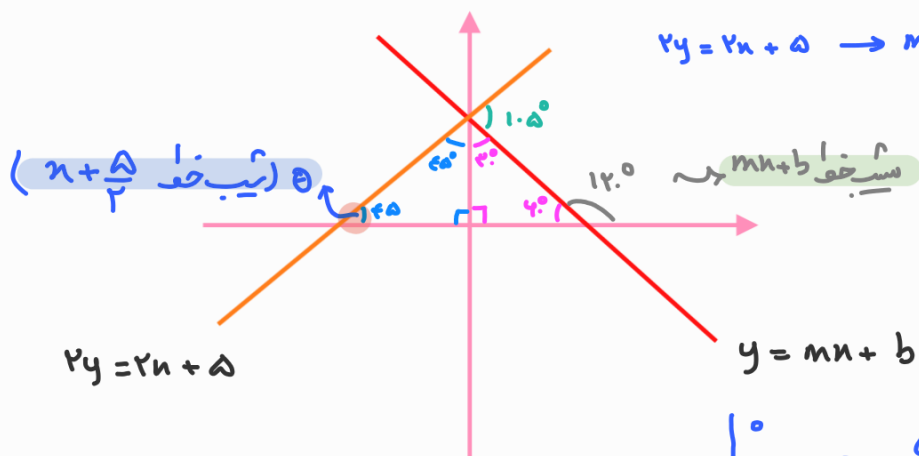


$$\cos \theta = \frac{r}{\sqrt{4+4\sqrt{4}}}$$



$$\begin{aligned} \sin\left(\frac{3\pi}{4} + x\right) &= \cos x \\ \cos\left(\frac{3\pi}{4} - x\right) &= -\sin x \\ \cos(\pi + x) &= -\cos x \\ \sin(4\pi - x) &= \sin(-x) = -\sin x \end{aligned}$$

$$\begin{aligned} f(x) &= -\cos x + \cos x + \cot x \\ f(x) &= \cot x \\ f\left(\frac{3\pi}{4}\right) &= \cot\left(\frac{3\pi}{4}\right) = -\sqrt{2} \end{aligned}$$



$$mb = -\sqrt{3} \times \frac{a}{r} = -\frac{a\sqrt{3}}{r}$$