سروش اخوان دهم تیز B

۲۰

Subject:
Date

۱- الف) $\sin x\cos y+\sin y\cos x=\frac{\sqrt2}{2}$ $\quad \left(\frac{\sqrt2}{2}+\left(-\frac{\sqrt3}{2}\right)\right)\left(\frac{\sqrt2}{2}-\left(-\frac{\sqrt3}{2}\right)\right)$

مساوی $\cos 45°$

$=\frac{\sqrt2-\sqrt3}{2}\cdot\frac{\sqrt2+\sqrt3}{2}=\frac{2-3}{4}=-\frac14$

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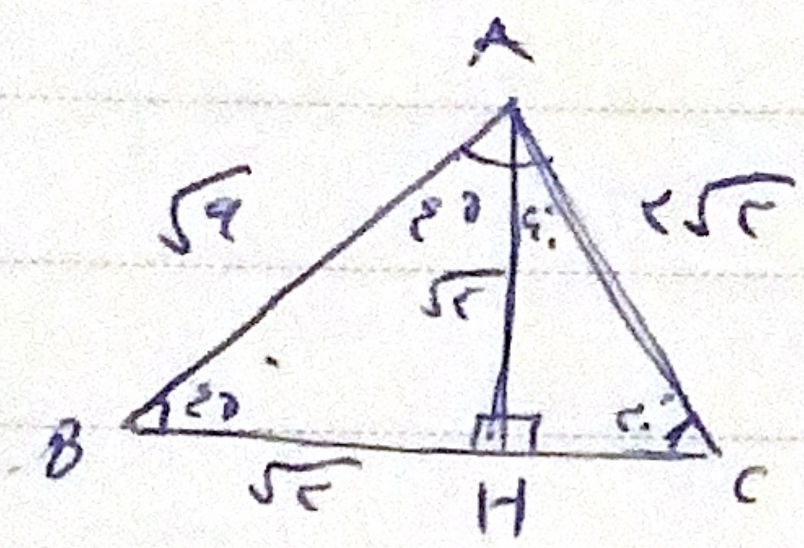
ب) $\frac{1+3\left(\frac{\sqrt3}{3}\right)^2}{4\left(\frac{\sqrt3}{2}\right)^2+4\left(-\frac{\sqrt2}{2}\right)^4}=\frac{1+\cancel{3}\cdot\frac{1}{\cancel{3}}}{\cancel{4}\cdot\frac{3}{\cancel{4}}+\cancel{4}\cdot\frac{1}{\cancel{4}}}=\frac12$

۲- الف)



$\frac{\sqrt6}{\sin90°}=\frac{AH}{\sin45°}=\frac{BH}{\sin45°}\Rightarrow\frac{\sqrt6}{1}=\frac{AH}{\frac{\sqrt2}{2}}\Rightarrow AH=BH=\sqrt3$

$\frac{2\sqrt3}{\sin90°}=\frac{\sqrt3}{\sin C}\Rightarrow\frac{2\sqrt3}{1}=\frac{\sqrt3}{\sin C}\Rightarrow\sin C=\frac12\Rightarrow C=30°$

$\frac{HC}{\sin60°}=\frac{\sqrt3}{\frac12}\Rightarrow\frac{HC}{\frac{\sqrt3}{2}}=\frac{\sqrt3}{\frac12}\Rightarrow HC=3$

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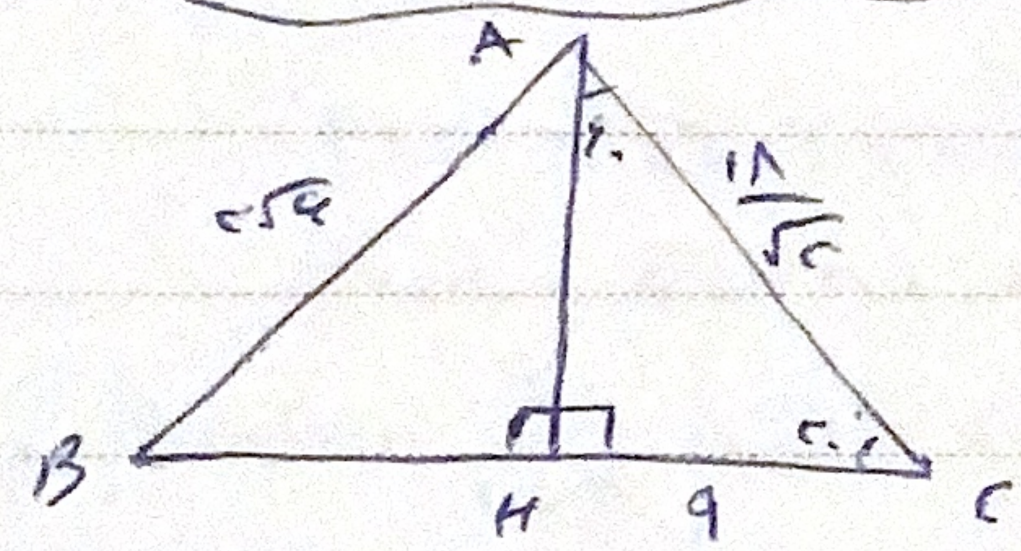
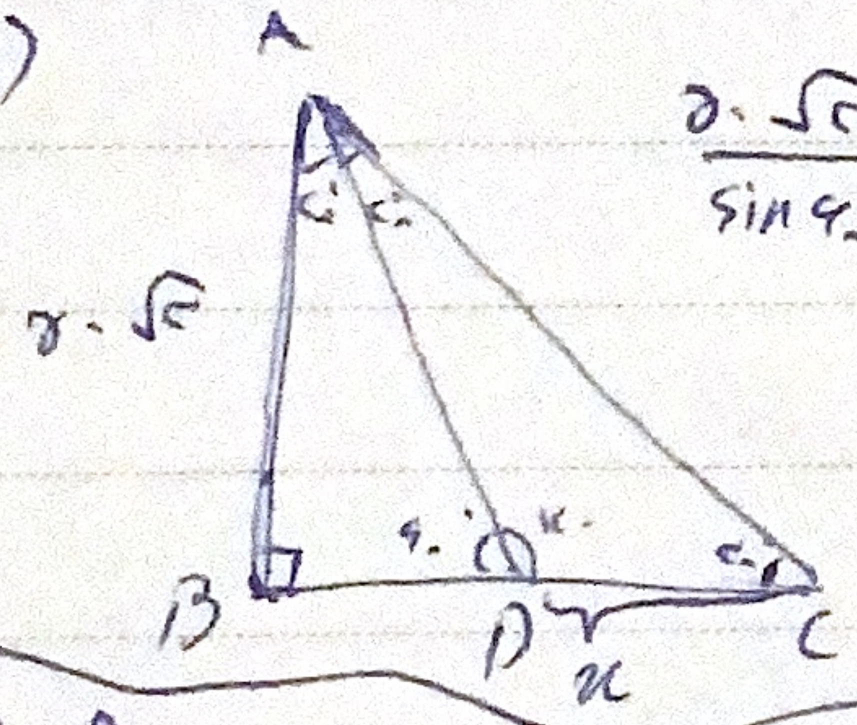
ب)



$\frac{9}{\sin60°}=\frac{AC}{\sin90°}\Rightarrow\frac{9}{\frac{\sqrt3}{2}}=\frac{AC}{1}\Rightarrow AC=\frac{18}{\sqrt3}$

$\frac{2\sqrt6}{\sin30°}=\frac{\frac{18}{\sqrt3}}{B}\Rightarrow\frac{2\sqrt6}{\frac12}=\frac{\frac{18}{\sqrt3}}{\sin B}\Rightarrow\sin B=\frac{\sqrt2}{2}\Rightarrow B=45°$

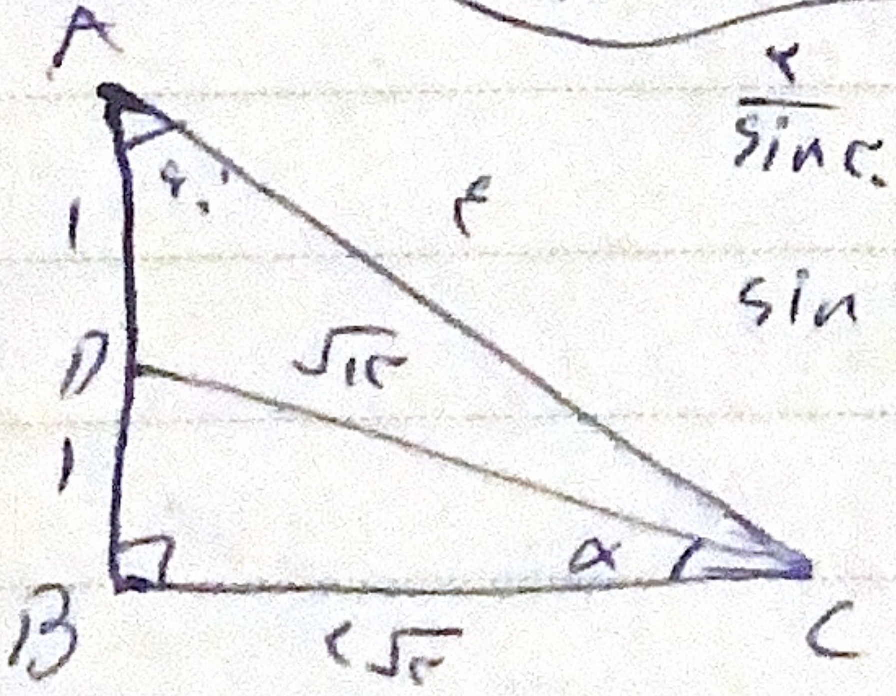
۳- الف)



$\frac{50\sqrt3}{\sin60°}=\frac{AD}{\sin90°}\Rightarrow\frac{50\sqrt3}{\frac{\sqrt3}{2}}=\frac{AD}{1}\Rightarrow AD=100$

$\overset{\triangle}{ADC}$ متساوی الساقین $\rightarrow AD=DC\Rightarrow x(DC)=100$

ب)



$\frac{2}{\sin30°}=\frac{BC}{\sin60°}\Rightarrow\frac{2}{\frac12}=\frac{BC}{\frac{\sqrt3}{2}}\Rightarrow BC=2\sqrt3$

$\sin60°=\frac{BC}{AC}=\frac{\sqrt3}{2}\Rightarrow\frac{2\sqrt3}{AC}=\frac{\sqrt3}{2}\Rightarrow AC=4$

$1+(2\sqrt3)^2=(DC)^2\Rightarrow DC=\sqrt{13}$

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$\frac{\sqrt{13}}{\sin90°}=\frac{1}{\sin\alpha}\Rightarrow\frac{\sqrt{13}}{1}=\frac{1}{\sin\alpha}\Rightarrow\sin\alpha=\frac{\sqrt{13}}{13}$

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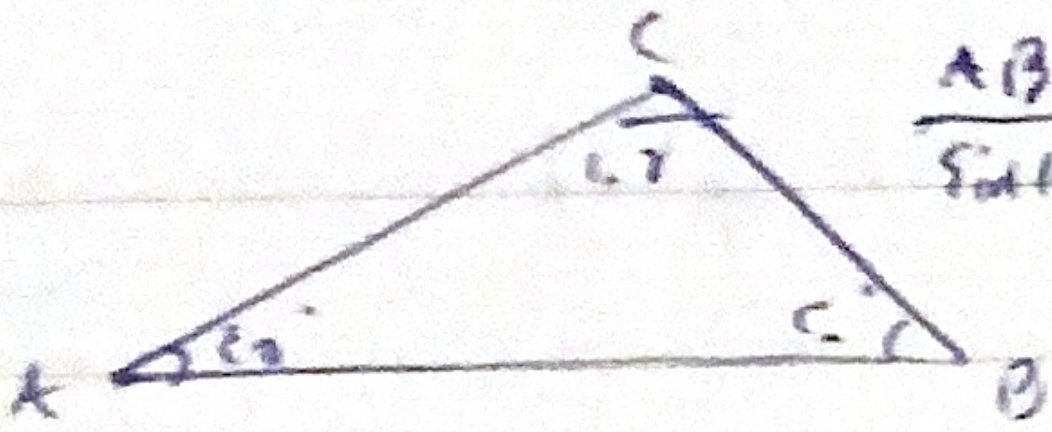


$\frac{AB}{\sin 105^\circ} = \frac{AC}{\sin 30^\circ}$, $\sin(۴۵+۶۰) = \sin ۴۵^\circ \cos ۶۰^\circ + \cos ۴۵^\circ \sin ۶۰^\circ$ -۴

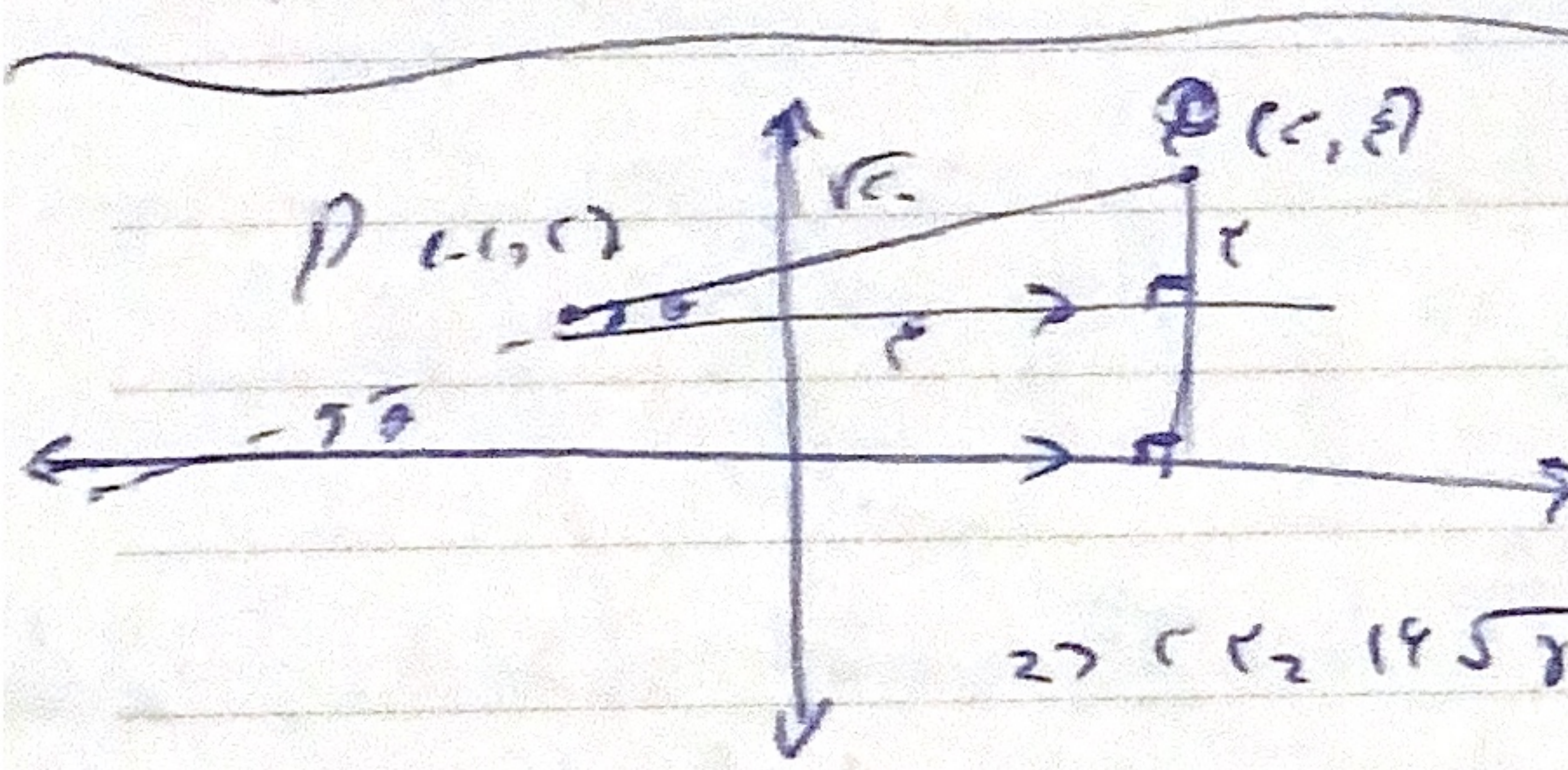
$= \frac{\sqrt{۲}}{۴} + \frac{\sqrt{۶}}{۴}$ ۲

$\Rightarrow \frac{AB}{\frac{\sqrt{۲}+\sqrt{۶}}{۴}} = \frac{AC}{\frac{۱}{۲}} \Rightarrow AB = \frac{\sqrt{۲}+\sqrt{۶}}{۲} \times AC \Rightarrow \frac{AB}{AC} = \frac{\sqrt{۲}+\sqrt{۶}}{۲}$

$\frac{S\,A\hat{B}E}{S\,B\hat{C}D} = \frac{\frac{۲\times۴\times\sin B}{۲}}{\frac{۲\times۹\times\sin B}{۲}} = \frac{۸}{۱۸} = \frac{۴}{۹}$ ۲ -۵

الف) $۴ \times ۲ \times \sin ۱۲۰^\circ = ۴\times۲\times\frac{\sqrt{۳}}{\cancel{۲}} = ۴\sqrt{۳}$ -۶

ب) $\frac{۱}{۲} \times ۲ \times ۴ \times \sin ۱۲۰^\circ = ۴ \times ۲ \times \frac{۱}{۲} \times \frac{\sqrt{۳}}{۲} = ۲\sqrt{۳}$ ۲

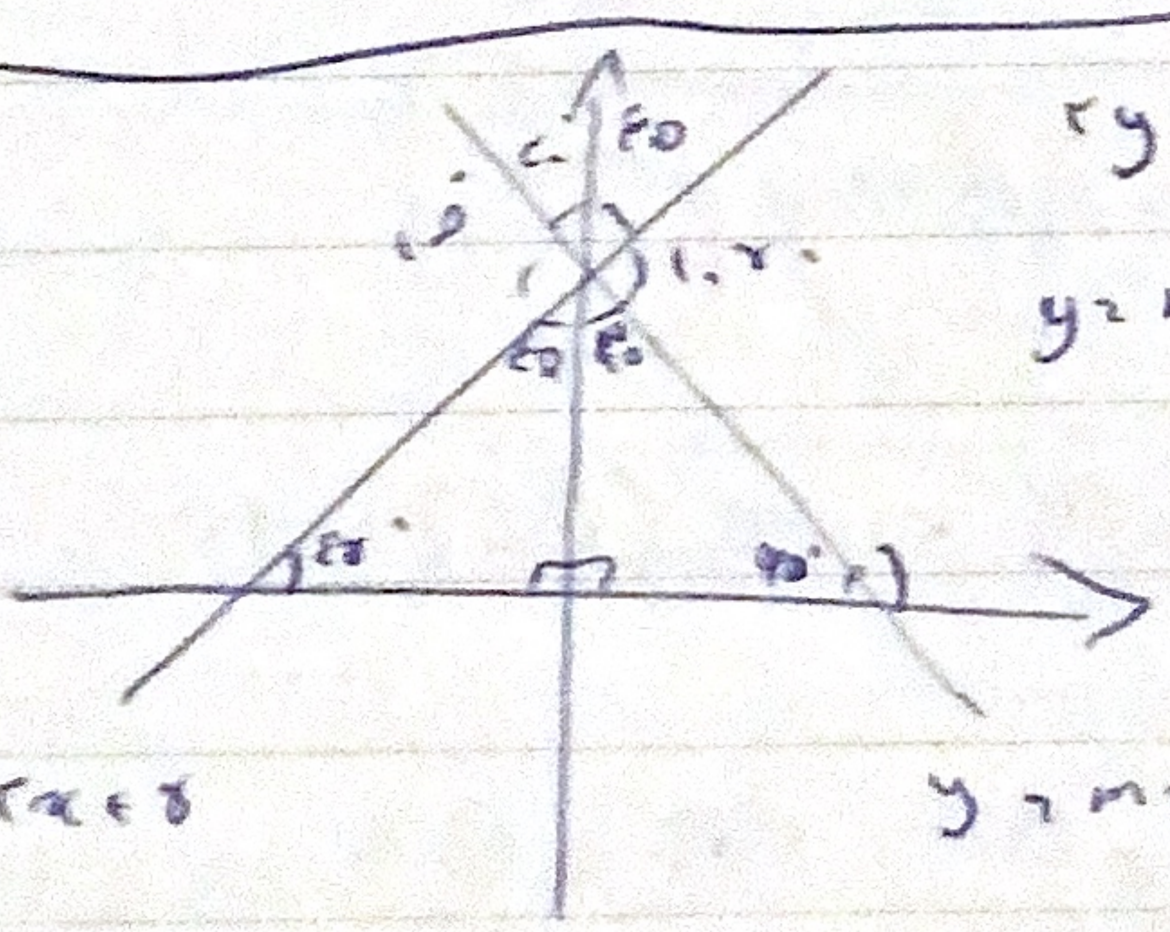


$۲^۲ + ۴^۲ = ۲۰$ -۷

$۴ = ۱۶ + ۲۰ - ۲ \times ۴ \times \sqrt{۲۰} \times \cos\theta$ ۲

$\Rightarrow -۳۲ = -۱۶\sqrt{۵} \times \cos\theta$

$\Rightarrow ۳۲ = ۱۶\sqrt{۵} \cdot \cos\theta \Rightarrow \cos\theta = \frac{۳۲}{۱۶\sqrt{۵}} \Rightarrow \cos\theta = \frac{۲}{\sqrt{۵}} = \frac{۲\sqrt{۵}}{۵}$



$۲y = ۲x + ۵ \Rightarrow y = x + ۲,۵$ -۸

$y = mx + b$, $b = ۲,۵$

$m = \tan ۱۲۰^\circ = \frac{\frac{\sqrt{۳}}{۲}}{-\frac{۱}{۲}} = -\sqrt{۳}$ ۲

$*y = ۲x + ۵$ $y = mx + b$ $mb = ۲,۵(-\sqrt{۳}) = \frac{-۵\sqrt{۳}}{۲}$

$f(\frac{۵\pi}{۴}) = \cos(\pi + \frac{۵\pi}{۴}) + \sin(\frac{\pi}{۲} - \frac{۳\pi}{۴}) - \tan(\frac{۲\pi}{۲} + \frac{۵\pi}{۴})$ -۹

$\Rightarrow \cos\frac{۹\pi}{۴} + \sin(-\frac{\pi}{۴}) - \tan\frac{۱۳\pi}{۴} = \frac{\sqrt{۲}}{۲} + (-\frac{\sqrt{۲}}{۲}) - \sqrt{۲} = -\sqrt{۲}$ ۲

$\frac{\cos x - \sin x}{-\cos x - (-\sin x)} = \frac{\cos x - \sin x}{\sin x - \cos x} = -\frac{(\sin x - \cos x)}{\sin x - \cos x} = -۱$ ۲ -۱۰

PAPCO