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نام و نام خانوادگی ...عرفان یزدی... پاسخنامه تشریحی تکلیف شماره ..۹.. کلاس ....دهم............

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الف)

$$\frac{\sqrt{2}-\sqrt{3}+\sqrt{2}-\sqrt{3}}{2}=\frac{2\sqrt{2}-2\sqrt{3}}{2}=\sqrt{2}-\sqrt{3}\ \checkmark$$

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

ب)

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

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الف)

$AH=BH \quad BH^2+CH^2=12 \quad BH^2+AH^2=6 \rightarrow 2BH^2=6 \rightarrow BH^2=3 \rightarrow BH=\sqrt{3}=AH$

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

ب)

$\cos 30^\circ=\frac{9}{AC}=\frac{\sqrt{3}}{2} \rightarrow AC=\frac{18}{\sqrt{3}}=6\sqrt{3}, \quad CH^2+AH^2=AC^2$; 81 ; 108 ; $27 \rightarrow AH=\sqrt{27}=3\sqrt{3}$

$\sin\hat{B}=\frac{AH}{AB}=\frac{3\sqrt{3}}{3\sqrt{6}}=\frac{\sqrt{2}}{2} \Rightarrow \hat{B}=45^\circ$

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الف)

$\sin 60^\circ=\frac{50\sqrt{3}}{AD}=\frac{\sqrt{3}}{2} \Rightarrow AD=100 \quad \cos 60=\frac{1}{2}=\frac{BD}{100} \Rightarrow BD=50$

$\sin 30=\frac{1}{2}=\frac{50\sqrt{3}}{AC} \rightarrow AC=100\sqrt{3} \rightarrow 7500+BC^2=30000 \rightarrow$

$BC^2=22500 \rightarrow BC=150 \rightarrow 150-50=100$

ب)

$m=\sqrt{12}=2\sqrt{3}$

~~$\cos 60^\circ=\frac{1}{2}=\frac{2}{AC} \Rightarrow AC=4 \rightarrow 16=4+n^2 \rightarrow n^2=12 \rightarrow 1^2+(2\sqrt{3})^2=13 \rightarrow DC^2 \rightarrow DC=\sqrt{13}$~~

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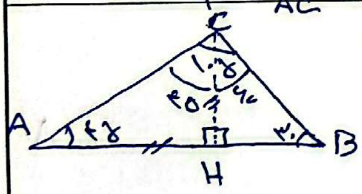

$CH=AH \quad \sin 60^\circ=\frac{\sqrt{3}}{2}=\frac{BH}{CB} \rightarrow 2BH=\sqrt{3}CB \rightarrow$

$BH=\frac{\sqrt{3}\,CB}{2} \quad \sin 45^\circ=\frac{\sqrt{2}}{2}=\frac{CH}{AC} \rightarrow AC=\frac{2CH}{\sqrt{2}}$

$\sin 30^\circ=\frac{1}{2}=\frac{CH}{CB} \rightarrow 2CH=CB \rightarrow \sqrt{3}CH=BH$

$AB=\sqrt{3}CH+CH \rightarrow \frac{AB}{AC}=\frac{CH(\sqrt{3}+1)}{CH(\frac{2}{\sqrt{2}})} \Rightarrow \frac{\sqrt{6}+\sqrt{2}}{2}\ \checkmark$

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$\underbrace{B_1=B_2 \rightarrow \frac{EB}{AB}=\frac{BD}{BC}=\frac{1}{2}=k}_{\text{دو مثلث متشابه اند}}$

$\frac{S_{\hat{BCD}}}{S_{\hat{ABE}}}=k^2=\frac{1}{4} \rightarrow \frac{S_{\hat{ABE}}}{S_{\hat{BCD}}}=4$

اثبات

$\frac{BH}{BH'}=\frac{AE}{CD}=k$

$\frac{\frac{1}{2}BH\times AE}{\frac{1}{2}\times CD\times BH'}=\frac{BH}{BH'}\times\frac{AE}{CD}=k^2$

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$$\frac{S_{ABE}}{S_{BCD}}=\frac{\frac{1}{2}\times 3\times 4\times \sin B_1}{\frac{1}{2}\times 6\times 3\times \sin B_2}\xrightarrow[\text{متقابل به رأس}]{B_1=B_2}\frac{S_{ABE}}{S_{BCD}}=\frac{8}{18}=\frac{4}{9}$$

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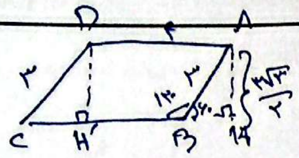


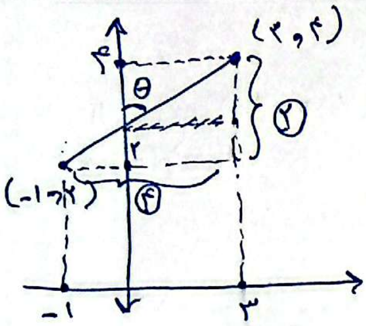
$\sin 60^\circ = \frac{\sqrt{3}}{2} = \frac{AH}{AB} \to AH = \frac{3\sqrt{3}}{2}$ الف)

۶ از آنجا یکه $S_{A\hat{B}H} = S_{A\hat{D}H'}$ مساحت متوازی الاضلاع را می توانیم با ضرب $4 \times \frac{3\sqrt{3}}{2}$ بدست آوریم.

ب) $\frac{3\sqrt{3}\times \cancel{4}^{2}}{\cancel{2}} = 6\sqrt{3}$ ✓

ب) $\frac{1}{2} \times 3 \times 4 \times \sin 120^\circ = 3\sqrt{3}$

0.5



۷ $x^2 + 4^2 = PQ^2 \to m_{PQ} = \frac{4-2}{3-(-1)} = \frac{1}{2} \to \tan\theta$

4 16

$1+\tan^2\theta = \frac{1}{\cos^2\theta} \to 1+\frac{1}{4} = \frac{1}{\cos^2\theta} \to$

$\cos^2\theta = \frac{4}{5} \xrightarrow[\cos\theta>0]{\text{حاده } \theta} \cos\theta = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$

$f(x) = -\cos x + \cos x - \cot x \to f(\frac{5\pi}{6}) = -\cot 180^\circ = 1$ ✓ 0

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

$f(x) = \cot x \to f(\frac{5\pi}{6}) = \cot(\frac{5\pi}{6}) = -\sqrt{3}$ ۹

0

$2y = 2x+5 \to m=1 \to \tan\theta = 1 \to \theta = 45^\circ \to y = mx+b \to m = \tan 120^\circ = -\sqrt{3}$ ۸

$\xrightarrow{(0,\frac{5}{2})} \frac{5}{2} = -\sqrt{3}(0)+b \to b = \frac{5}{2}$ $\quad mb = \frac{5}{2}\times(-\sqrt{3}) = \frac{-5\sqrt{3}}{2}$

$\frac{\cos x - \sin x}{-\cos x + \sin x} = \frac{\cos x - \sin x}{-(\cos x - \sin x)} = -1$ ✓ 0

$\sin(\frac{17\pi}{2}+x) = \cos x \quad , \quad \cos(3\pi + x) = -\cos x$ ۱۰

$\cos(\frac{15\pi}{2}-x) = -\sin x \quad , \quad \sin(6\pi - x) = -\sin x$

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