ایلیا خاکسار　　　　دهم ریاضی B

۱

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

ب) $\dfrac{1+2\times\frac{1}{3}}{6\times\frac{3}{6}+2\times\frac{1}{2}}=\frac{1}{2}$

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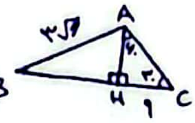
الف) $AH=\sin 45^\circ\times\sqrt{6}=\frac{\sqrt{2}}{2}\times\sqrt{6}=\frac{\sqrt{12}}{2}=\sqrt{3}$　　$(2\sqrt{3})^2=\sqrt{3}^2+HC^2=12$　　$HC^2=12-3=9$　　$HC=3$

ب)



$\frac{\sqrt{3}}{2}\times AC=9$

$\Rightarrow AC=6\sqrt{3}$

$AH=\frac{1}{2}\times 6\sqrt{3}=3\sqrt{3}$

$3\sqrt{6}\times\sin B=3\sqrt{3}$

$\sin B=\frac{\sqrt{3}}{\sqrt{6}}\Rightarrow B=45^\circ$

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الف) $\frac{\sqrt{3}}{2}\times AD=50\sqrt{3}$　$AD=100$　$\frac{1}{2}\times AC=50\sqrt{3}$　$AC=100\sqrt{3}$　$BD=\frac{1}{2}\times 100=50$　$BC=\frac{\sqrt{3}}{2}\times 100\sqrt{3}=150$

$x=BC-BD=150-50=100$

ب) $AC\times\frac{1}{2}=2\Rightarrow AC=4\Rightarrow BC=\frac{\sqrt{3}}{2}\times 4=2\sqrt{3}$　$CD^2=12+1=13\Rightarrow CD=\sqrt{13}\Rightarrow \sin\alpha=\frac{1}{\sqrt{13}}=\frac{\sqrt{13}}{13}$

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$AC=x\Rightarrow CH=\frac{\sqrt{2}}{2}x\Rightarrow \frac{BH}{2}=\frac{\sqrt{2}}{2}x\times\frac{\sqrt{3}}{2}=\frac{\sqrt{6}}{4}x\Rightarrow BH=\frac{\sqrt{6}}{2}x\Rightarrow AB=\frac{\sqrt{6}}{2}x+\frac{\sqrt{2}}{2}x=\frac{\sqrt{6}+\sqrt{2}}{2}x$

$\frac{AC}{AB}=\frac{2}{\sqrt{6}+\sqrt{2}}$

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$S(A\hat{E}B)=\frac{2\sin B\times 4}{2}\Rightarrow S(B\hat{C}D)=\frac{6\sin B\times 3}{2}$　　$\frac{S(ABE)}{S(BCD)}=\frac{4\sin B}{9\sin B}=\frac{4}{9}=\frac{2}{3}$

$\frac{\sqrt{3}}{4} \times 4 \times 4 = 4\sqrt{3}$ (ب)

$\frac{1}{2} \times 4 \times 4 \times \frac{\sqrt{3}}{2} = 4\sqrt{3}$ (ب)

$4^2 + 8^2 = 80 \Rightarrow \sqrt{80} = pq \Rightarrow \cos\theta = \frac{8}{\sqrt{80}} = \frac{2\sqrt{5}}{5}$

$180 - 105 = 75$

$AO = 2,5$

$75 - 45 = 30$

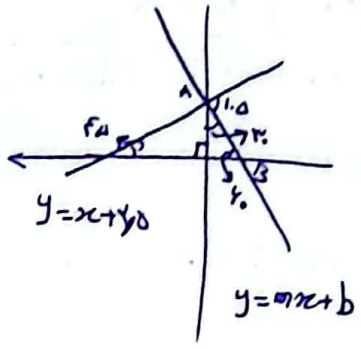
$\frac{\sqrt{3}}{2} \times BH = \frac{5}{2}$

$BA = 5\sqrt{3}$

$BO = \frac{5\sqrt{3}}{2} \Rightarrow b = \frac{5\sqrt{3}}{2}$

$m = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$

$mb = \sqrt{3} \times \frac{5\sqrt{3}}{2} = \frac{15}{2}$



$f\left(\frac{5\pi}{6}\right) = \cos\left(\pi + \frac{5\pi}{6}\right) + \sin\left(\frac{\pi}{2} - \frac{5\pi}{6}\right) - \tan\left(\frac{3\pi}{2} + \frac{5\pi}{6}\right) = \cos\frac{11\pi}{6} + \cos\frac{5\pi}{6} - \left(-\cot\frac{5\pi}{6}\right) = \cot\frac{5\pi}{6}$

$\Rightarrow \cot\frac{5\pi}{6} = \frac{\cos\frac{5\pi}{6}}{\sin\frac{5\pi}{6}} = \frac{-\frac{\sqrt{3}}{2}}{\frac{1}{2}} = -\sqrt{3}$

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