بازان یاراحمدی: سری ۲ دفتر تکلیف ۵

۲۰

۱) الف) $(\sin 135 + \sin 300)(\cos 315 - \cos 150)$

$(\frac{\sqrt2}{2} - \frac{\sqrt3}{2})(\frac{\sqrt2}{2} + \frac{\sqrt3}{2}) = (\frac{\sqrt2}{2})^2 - (\frac{\sqrt3}{2})^2 = \frac{2}{4} - \frac{3}{4} = -\frac{1}{4}$

بازان یاراحمدی

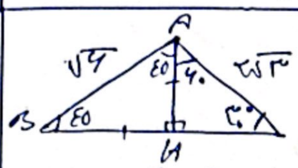
ب) $\frac{1+3\tan^2 210}{4\cos^2 330 + 2\cos^2 315} =$

$1+3(\frac{1}{\sqrt3})^2 = 1+1 = 2$

$4(\frac{\sqrt3}{2})^2 + 2(-\frac{\sqrt2}{2})^2 = 4\times\frac{3}{4} + 2\times\frac{2}{4} =$

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

۲) الف)



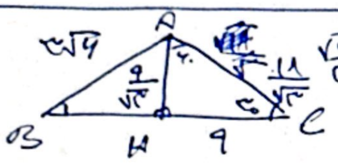
$AH = \frac{\sqrt2}{2}\times\sqrt6 = \sqrt3$

$\sin\theta \times 2\sqrt3 = \sqrt3$

$\sin\theta = \frac{\sqrt3}{2\sqrt3} = \frac12 \Rightarrow \theta = 30°$

$HC = 2\sqrt3 \times \frac{\sqrt3}{2} = 3$

ب)



$\frac{\sqrt3}{2}x = 9 \quad x = \frac{9}{\frac{\sqrt3}{2}} = \frac{18}{\sqrt3}$

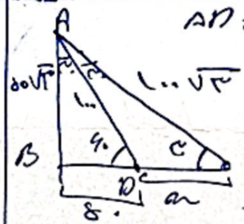
$AH = \frac12 \times \frac{18}{\sqrt3} = \frac{9}{\sqrt3}$

$\sin B \times 3\sqrt6 = \frac{9}{\sqrt3}$

$\sin B = \frac{\frac{9}{\sqrt3}}{3\sqrt6} = \frac{3}{\sqrt{18}}$

$\frac{3}{3\sqrt2} = \frac{\sqrt2}{2} \Rightarrow B = 45°$

۳) الف)



$AD = 50\sqrt3 \div \frac{\sqrt3}{2} = 100$

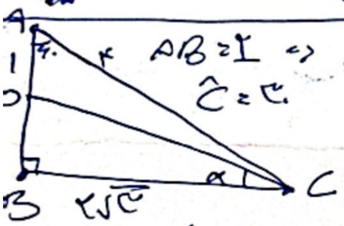
$BD = 50$

$BC = \frac{\sqrt3}{2}\times 100\sqrt3 = 150$

$150 - 50 = 100$

$x = DC$

ب)



$AB = 2 \Rightarrow AC = 4$

$\hat C = 30$

$BC = \frac{\sqrt3}{2}\times 4 = 2\sqrt3$

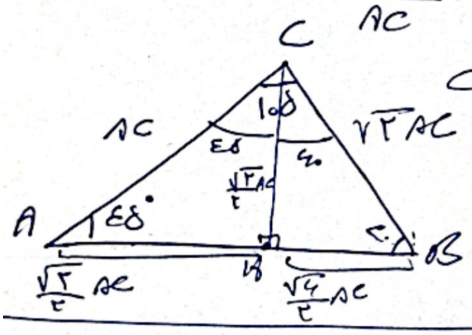
$\sin\alpha = \frac{BD}{DC}$

$DC^2 = (1)^2 + (2\sqrt3)^2 = 1+12 = 13 \Rightarrow DC = \sqrt{13}$

$\sin\alpha = \frac{\frac{\sqrt{13}}{1}}{2\sqrt3} = \frac{\sqrt{13}}{2\sqrt3}$

۴)

$\frac{AB}{AC} = ?$ $\quad CH = \frac{\sqrt2}{2}AC \quad AH = \frac{\sqrt2}{2}AC$



$CB = \frac{\sqrt2}{2}AC \times 2 = \sqrt2 AC$

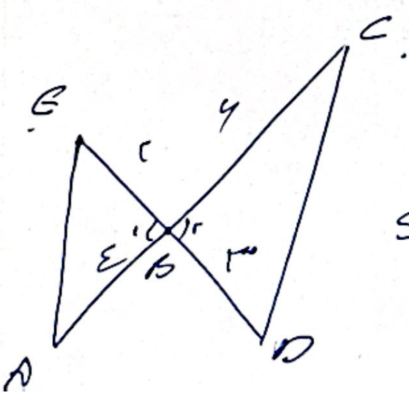
$BH = \frac{\sqrt3}{2}\times\sqrt2 AC = \frac{\sqrt6}{2}AC$

$BA = \frac{\sqrt2}{2}AC + \frac{\sqrt6}{2}AC = \frac{\sqrt2+\sqrt6}{2}AC$

$\frac{AB}{AC} = \frac{\frac{\sqrt2+\sqrt6}{2}AC}{AC} = \frac{\sqrt2+\sqrt6}{2}$

۵)

متقابل به رأس $\hat B_1 = \hat B_2$



$S_{ABE} = \frac12\times2\times4\times\sin B_1$

$S_{BCD} = \frac12\times6\times3\times\sin B_2$

$\frac{S_{ABE}}{S_{BCD}} = \frac{2\times4}{6\times3} = \frac{4}{9}$

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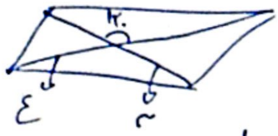


$S = \frac{1}{2} ab \sin\alpha$

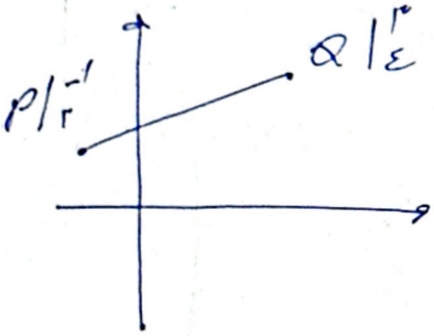
$\frac{1}{2}\times 4\times 6\times \sin 120 =$

$\frac{1}{2}\times 4\times 6\times \frac{\sqrt{3}}{2} = 6\sqrt{3}$

(الف)

$S = \frac{1}{2} ab \sin\alpha$

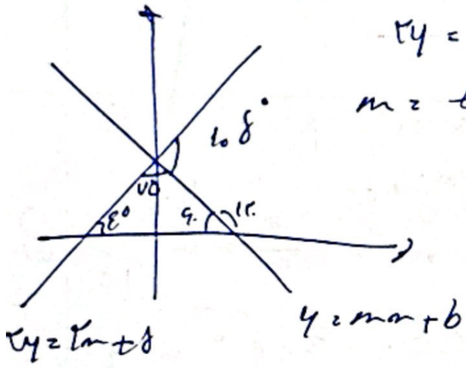
$\frac{1}{2}\times 2\times 3\times 4\times \frac{\sqrt{3}}{2} = 3\sqrt{3}\times 2 = 6\sqrt{3}$



$\tan\theta = m \qquad m = \frac{\Delta y}{\Delta x} = \frac{4-2}{3+1} = \frac{2}{4} = \frac{1}{2}$

$\tan\theta = \frac{1}{2}$

$\cos\theta = \frac{2}{\sqrt{5}}$



$2y = 2x + 5 \Rightarrow y = x + \frac{5}{2} \quad m = 1 \quad \tan\theta = 1 \quad \theta = 45^\circ$

$m = \tan 120 \Rightarrow -\sqrt{3} \Rightarrow y = -\sqrt{3}x + b$

عرض از مبدأ ها برابر [illegible]:

$b = \frac{5}{2}$

$y = -\sqrt{3}x + \frac{5}{2}$

$x_h = \frac{5\sqrt{3}}{6}$

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

$\cos(330) + \sin(300) - \tan(60)$

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

$\Rightarrow \frac{\sin\left(\frac{\pi}{2} + x\right) + \cos\left(\frac{3\pi}{2} - x\right)}{\cos(\pi + x) - \sin(-x)} = \frac{\cos(x) - \sin(x)}{-\cos(x) + \sin x} = -1$