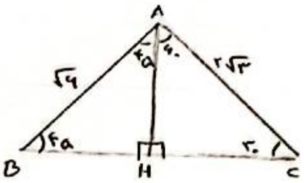
Date: Sub: مونا عباسی

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

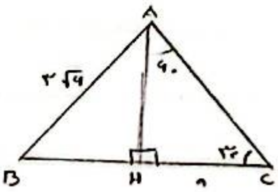
ب) $\frac{1+3\left(\frac{1}{\sqrt{3}}\right)^2}{4\left(\frac{\sqrt{2}}{2}\right)^2+2\left(-\frac{\sqrt{2}}{2}\right)^2}=\frac{1+3\times\frac{1}{3}}{4\times\frac{2}{4}+2\times\frac{2}{4}}=\frac{1+1}{3+1}=\frac{2}{4}=\frac{1}{2}$

۲- الف)



$AH=\frac{\sqrt{2}}{2}\times\sqrt{6}=\frac{2\sqrt{3}}{2}=\sqrt{3}$ $AH=\frac{1}{2}AC\rightarrow C=30$ $HC=\frac{\sqrt{3}}{2}\times 2\sqrt{3}=3$

ب)



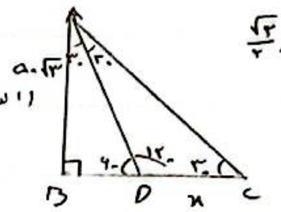
$\frac{\sqrt{3}}{2}\times AC=9\rightarrow AC=6\sqrt{3}$ $AH=\frac{1}{2}\times 6\sqrt{3}=3\sqrt{3}$ $\sin B\times 3\sqrt{6}=3\sqrt{3}$

$\sin B=\frac{\sqrt{2}}{2}$

$B\rightarrow \boxed{45}$
$B\rightarrow 135$

زاویه باید حاده باشد با توجه به شکل

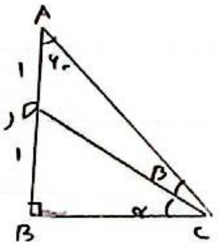
۳- الف)



$\frac{\sqrt{3}}{2}\times AD=50\sqrt{3}\rightarrow AD=100$ $\hat{A}=180-(90+30)=60\rightarrow D\hat{A}C=60-30=30$

$D\hat{A}C=D\hat{C}A=30\rightarrow A\hat{D}C$ متساوی‌الساقین $AD=100=x$

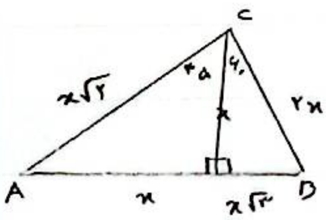
ب)



$\overset{\frown}{\alpha+\beta}=\frac{1}{2}\times AC\rightarrow AC=4$ $BC=\frac{\sqrt{3}}{2}\times AC=2\sqrt{3}\rightarrow DC=\sqrt{1^2+(2\sqrt{3})^2}=\sqrt{13}$

$\sin\alpha\times\sqrt{13}=1\rightarrow \sin\alpha=\frac{\sqrt{13}}{13}$

۴-



$\sin 45=\frac{\sqrt{2}}{2}\rightarrow x=\frac{\sqrt{2}}{2}\times AC\rightarrow AC=x\sqrt{2}$

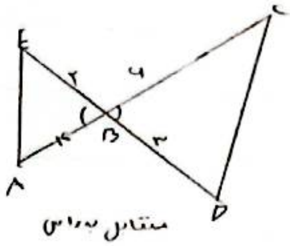
$AH=\frac{\sqrt{2}}{2}\times x\sqrt{2}=x$ $H\hat{C}B=105-45=60$ $B=30$

$x=\frac{1}{2}\times BC\rightarrow BC=2x\rightarrow HB=\frac{\sqrt{3}}{2}\times 2x=x\sqrt{3}$ $\frac{AB}{AC}=\frac{x+x\sqrt{3}}{x\sqrt{2}}$

$=\frac{x(1+\sqrt{3})}{x\sqrt{2}}=\frac{\sqrt{2}+\sqrt{6}}{2}$

Elipon

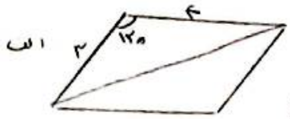
۵



$$\frac{S_{A\hat{B}E}}{S_{D\hat{B}C}} = \frac{\frac{1}{2}\sin A\hat{B}E \times AB \times BE}{\frac{1}{2}\sin D\hat{B}C \times DB \times BC} \xrightarrow{\sin A\hat{B}E = \sin D\hat{B}C} \frac{2\times 4}{3\times 6} = \frac{4}{9}$$

۶-

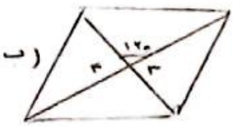
الف)



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

$\sin 120° = \frac{\sqrt{3}}{2}$

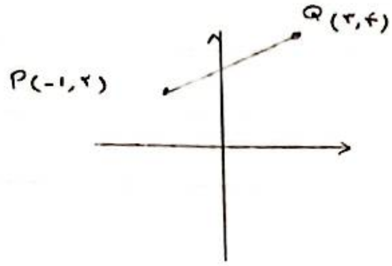
ب)



$S = \frac{1}{2}\times 3 \times 4 \times \sin 120 = 3\sqrt{3}$

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

۷-



$y = ax+b \qquad a = \tan\theta = \frac{\Delta y}{\Delta x} \qquad \tan\alpha = \frac{4-2}{3-(-1)} = \frac{1}{2}$

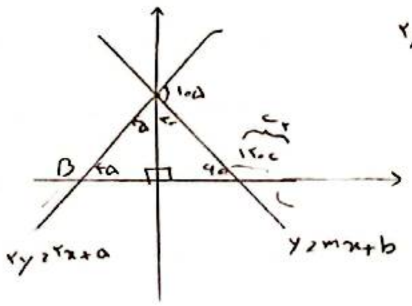
① $1+\tan^2\theta = \frac{1}{\cos^2} \rightarrow \cos\theta = \pm\frac{2}{\sqrt{5}}$ $\cos\theta = +\frac{2\sqrt{5}}{5}$ ربع اول

② $1+\tan^2\theta = \frac{1}{\cos^2} \rightarrow \cos\theta = \pm\frac{2}{\sqrt{5}}$ $\cos\theta = -\frac{2\sqrt{5}}{5}$ - - -

① زاویه با جهت مثبت محور x $\alpha, \theta = \tan\theta = \frac{1}{2}$

② - - - - $\alpha = 180 - \alpha \rightarrow \tan\theta = -\tan\alpha = -\frac{1}{2}$

۸-



$2y = 2x+5 \rightarrow y = x+2/5 \rightarrow \tan\alpha = \frac{1}{1} \rightarrow \alpha$ ① 45 ✓ ② 225 درستی زاویه ۲۲۵ ضریب

$B\hat{A}H = 180-(90+45) = 45$

$A\hat{B}H$ متساوی‌الساقین $,\ AH =$ عرض از مبدا $2/5 \rightarrow BH = 2/5$

$H\hat{A}C = 180-(105+45) = 30 \rightarrow H\hat{C}A = 180-(90+30) = 60 \rightarrow c_2 = 180-60 = 120 \quad \tan 120 = -\sqrt{3}$

$b = 2/5$ (عرض از مبدا مشترک) $\rightarrow mb = -\sqrt{3}\times 2/5 = -\frac{5\sqrt{3}}{2}$

۹-

$f(\frac{5\pi}{4}) = \cos(\pi + \frac{5\pi}{4}) + \sin(\frac{\pi}{2} - \frac{5\pi}{4}) - \tan(\frac{3\pi}{2} + \frac{5\pi}{4}) = \cos(\frac{5\pi}{4}) - \cos(\frac{5\pi}{4})$

$- \cot(\frac{5\pi}{4}) = -\cot 150 = +\sqrt{3} \rightarrow \cot 150 = -\sqrt{3}$

Date: Sub:

$$\frac{\sin\left(\frac{17\pi}{2}+x\right)+\cos\left(\frac{13\pi}{2}-x\right)}{\cos(2\pi+x)-\sin(4\pi-x)} = \frac{\cos(x)-\sin(x)}{-\cos(x)+\sin(x)} = \frac{-(-\cos(x)+\sin(x))}{-\cos(x)+\sin(x)} = -1$$

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