دهم تجربی C بنام خدا روژین سادات امامی

۲۵

۱)

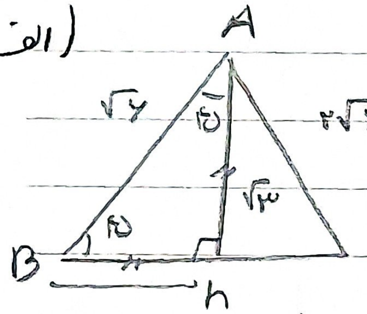
الف) $\left(\frac{\sqrt{2}}{2}+\left(\frac{-\sqrt{3}}{2}\right)\right)\left(\frac{\sqrt{2}}{2}-\left(\frac{-\sqrt{3}}{2}\right)\right)=\left(\frac{\sqrt{2}}{2}\right)^2-\left(\frac{-\sqrt{3}}{2}\right)^2$

$\Rightarrow \frac{2}{4}-\frac{3}{4}=\boxed{\frac{-1}{4}}$

ب) $\dfrac{1+3\left(\frac{\sqrt{3}}{3}\right)^2}{4\left(\frac{\sqrt{2}}{2}\right)^2+2\left(\frac{-\sqrt{2}}{2}\right)^2}=\dfrac{\cancel{2}\ \cancel{1+1}}{\cancel{2}\left(\frac{2}{4}+\frac{1}{2}\right)}=\dfrac{1}{\frac{8}{4}}=\boxed{\frac{1}{2}}$

۲)

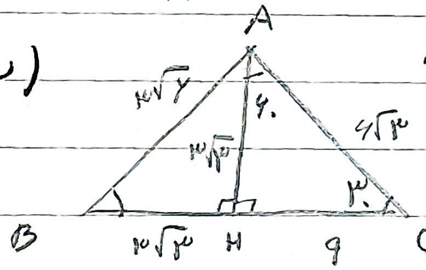
الف)



$AH \Rightarrow \frac{\sqrt{2}}{2}\times\sqrt{6}=\frac{\sqrt{12}}{2}=\sqrt{3}=AH=BH$

$HC \Rightarrow (2\sqrt{3})^2-\sqrt{3}^2 \Rightarrow \sqrt{12-3}=\sqrt{9} \rightarrow \sqrt{9}=\boxed{3}$

ب)



$AC \Rightarrow AC\times\underbrace{\frac{\sqrt{3}}{2}}_{\sin 60}=9 \rightarrow AC=9\times\frac{2}{\sqrt{3}}=6\sqrt{3}$ $\quad (\sqrt{3})^2$

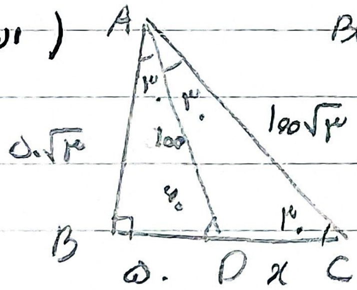
$AH \rightarrow AC\times\sin 30 \rightarrow 6\sqrt{3}\times\frac{1}{2}=3\sqrt{3}$

$BH=\sqrt{(3\sqrt{6})^2-(3\sqrt{3})^2}=\sqrt{54-27}=\sqrt{27}=3\sqrt{3}$

$\Rightarrow \hat{B}=\boxed{45^\circ}$

۳)

الف)

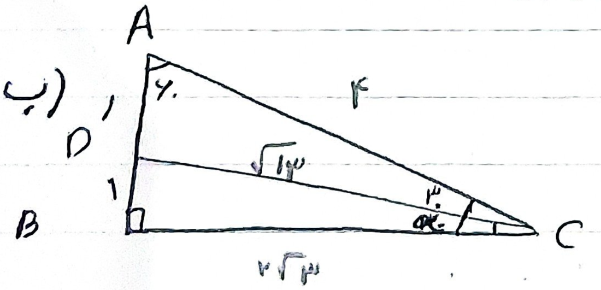


$BD \rightarrow \sin 30 \times \underbrace{AD}_{\frac{AB}{\sin 60}} \rightarrow \frac{1}{2}\times 50\sqrt{3}\times\frac{2}{\sqrt{3}}=50$

$BC \rightarrow 100\sqrt{3}\times\underbrace{\sin 60}_{\frac{\sqrt{3}}{2}}=50\times 3=150$

$\boxed{150-50=100=x}$

ب)



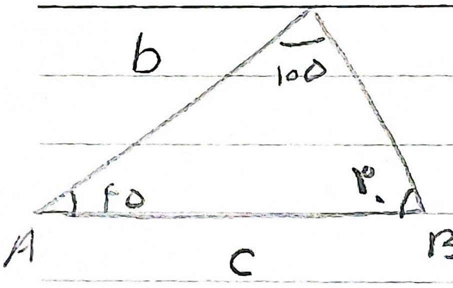
$BC=\sin 60\times AC \rightarrow$

$\frac{\sqrt{3}}{2}\times 4=2\sqrt{3}$ $\quad -\sqrt{13}$ ✗

$DC=\sqrt{1+12}=\sqrt{13}$ $\quad \sqrt{13}$ ✓

$\sin\hat{C}=\frac{1}{\sqrt{13}}=\frac{\sqrt{13}}{13}$

/ / C



(4)

$\frac{\sin C}{c} = \frac{\sin A}{a} = \frac{\sin B}{b}$

$\frac{\sin(135-30)}{c} = \frac{\sin 30}{b}$

$\sin(135-30) \Rightarrow \sin 135 \times \cos 30 - \sin 30 \times \cos 135$

$\to \frac{\sqrt{2}}{2} \times \frac{\sqrt{3}}{2} - \frac{1}{2} \times \frac{-\sqrt{2}}{2} \Rightarrow \frac{\sqrt{6}+\sqrt{2}}{4}$

$\frac{\frac{\sqrt{6}+\sqrt{2}}{4}}{c} = \frac{\frac{1}{2}}{b} \Rightarrow \frac{c}{b} = \frac{\frac{\sqrt{6}-\sqrt{2}}{4}}{\frac{1}{2}} = \frac{2(\sqrt{6}+\sqrt{2})}{4} =$

$\Rightarrow \boxed{\frac{\sqrt{6}+\sqrt{2}}{2}}$

(5)

$\frac{S_{ABE}}{S_{BCD}} = \frac{\cancel{\frac{1}{2}} \sin B \times 2 \times 4}{\cancel{\frac{1}{2}} \sin B \times 3 \times 3} = \boxed{\frac{4}{9}}$

(6)

الف) $S = \sin 120 \times 4 \times 3 \Rightarrow \frac{\sqrt{3}}{2} \times 4 \times 3 = 6\sqrt{3}$

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

(7)

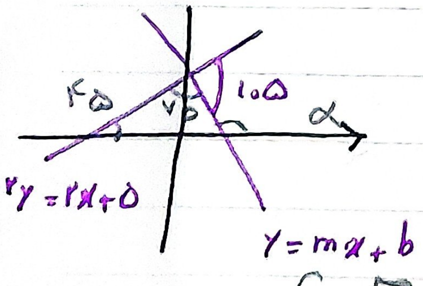
x مثبت $\to \tan\theta = \frac{\Delta y}{\Delta x} = \frac{4-2}{3+1} = \frac{1}{2} = \tan\theta$

$1+\tan^2\theta = \frac{1}{\cos^2\theta} \to 1+\frac{1}{4} = \frac{5}{4}$, $\cos^2\theta = \frac{4}{5} \to \cos\theta = +\sqrt{\frac{4}{5}}$, $\frac{2\sqrt{5}}{5}$; $-\sqrt{\frac{4}{5}}$ ✗

x منفی $\to \tan(\pi-\theta) = -\tan\theta \Rightarrow \tan\theta = \frac{-1}{2} \to \cos = -\sqrt{\frac{4}{5}}$ منفی

$-\frac{2\sqrt{5}}{5}$

(8)



$2y = 2x+5 \to y = x + \frac{5}{2}$

$\tan\theta = 1 \to \boxed{\theta = 45}$

$\theta = 300°$ غلط

$\alpha = 45 + 75 = 120 \to \tan\theta = 120$

عرض از مبدا $= \frac{5}{2}$

$\tan\theta = \frac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = -\sqrt{3}$

$mb \to \frac{5}{2} \times -\sqrt{3} = \boxed{\frac{-5\sqrt{3}}{2}}$

$$f x = \cos(\pi + x) + \sin\left(\frac{\pi}{۲} - x\right) - \tan\left(\frac{۳\pi}{۲} + x\right)$$ ۹

$$= \cancel{-\cos(x)} + \cancel{\cos(x)} - (-\cot(x)) = \cot(x)$$

$$\longrightarrow \cot\left(\frac{۵\pi}{۴}\right) \Rightarrow \frac{\frac{-\sqrt{۳}}{۲}}{\frac{۱}{۲}} = \boxed{-\sqrt{۳}}$$

۱۵.

$۱۴\pi + \frac{\pi}{۲}$ $\quad$ $۷\pi + \frac{\pi}{۲}$

$$\frac{\sin\left(\frac{۱۷\pi}{۲} + x\right) + \cos\left(\frac{۱۵\pi}{۲} - x\right)}{\cos(۳\pi + x) - \sin(۴\pi - x)} \Rightarrow$$ ۱۰

$$\frac{\cos(x) - \sin(x)}{-\cos(x) + \sin(x)} = \boxed{-۱}$$