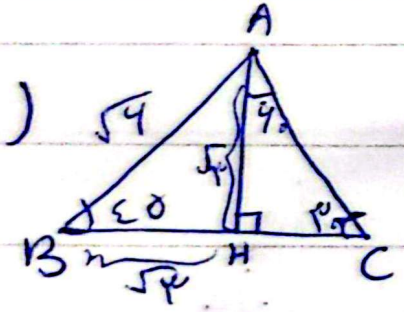
۱۸/۷/۹۵

نام و نام خانوادگی: فاطمه زهرا عجل زاده کلاس: دهم دختر A تکلیف شماره: ۲۵

۱) الف) $(\sin 135 + \sin 300)(\cos 135 - \cos 150) = \left(\frac{\sqrt{2}-\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}+\sqrt{3}}{2}\right) = \frac{-1}{4}$

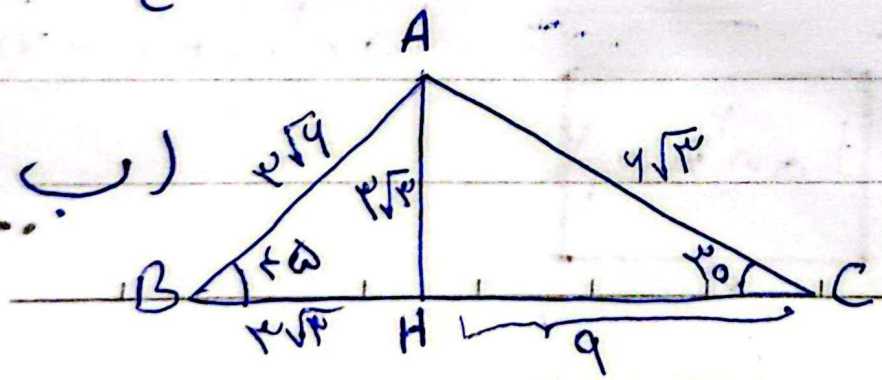
ب) $\frac{1+3\tan^2 210}{4\cos^2 330 + 2\cos^2 225} = \frac{1+3\left(\frac{\sqrt{3}}{3}\right)^2}{4\left(\frac{\sqrt{3}}{2}\right)^2 + 2\left(\frac{-\sqrt{2}}{2}\right)^2} = \frac{1+1}{3+1} = \frac{2}{4} = \frac{1}{2}$

۲) الف)



$\overline{HC} = 2\sqrt{3} \times \frac{\sqrt{3}}{2} = 3$

ب)



$\hat{B} = 45°$

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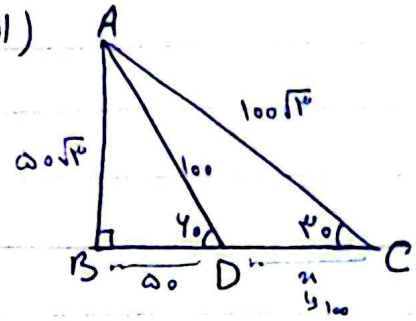
۴)

الف)



$$BC = 100\sqrt{3} \times \frac{\sqrt{3}}{2} = 150 \Rightarrow \boxed{x = 100}$$

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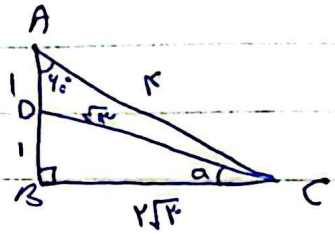
ب)



$$\sin\alpha = \frac{1}{\sqrt{13}} = \boxed{\frac{\sqrt{13}}{13}}$$

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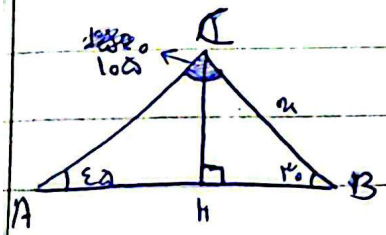

$$AC = \sqrt{\frac{x^2}{2} \times 2} = \frac{x}{2}\sqrt{2}$$

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

$$\Rightarrow \frac{AB}{AC} = \frac{x(1+\sqrt{2})}{2} \times \frac{2}{x\sqrt{2}}$$

$$= \frac{1+\sqrt{2}}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$$

$$= \boxed{\frac{\sqrt{2}+\sqrt{4}}{2}}$$

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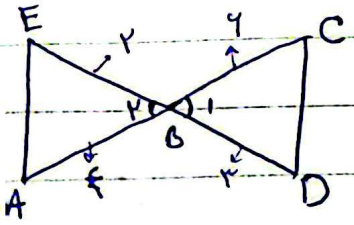

$$\hat{B}_1 = \hat{B}_2 \rightarrow \sin B_1 = \sin B_2 \quad *$$

$$S_{ABE} = \frac{1}{2} \times 2 \times 4 \times \sin B_2 = 4\sin B_2$$

$$S_{BCD} = \frac{1}{2} \times 4 \times 3 \times \sin B_1 = 9\sin B_1$$

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$$*.b \Rightarrow \frac{S_{ABE}}{S_{BCD}} = \boxed{\frac{4}{9}}$$

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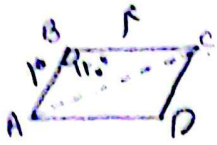
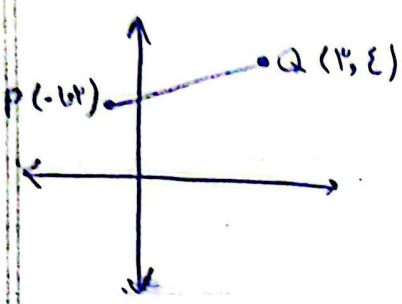
۱۴) الف)



$$S_{ABCD} = ۲ \times \left(\frac{۱}{۲} \times ۴ \times ۴ \times \sin ۱۲۰^\circ\right) = \frac{۱۲\sqrt{۳}}{۲} = \boxed{۶\sqrt{۳}}$$

۱۷)

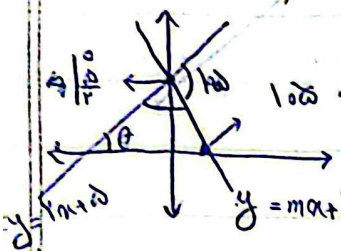


$$\text{شیب} = \tan\alpha : \frac{۴-۲}{۳-(-۱)} = \frac{۲}{۴} = \frac{۱}{۲}$$

$$\tan^۲\alpha + ۱ = \frac{۱}{\cos^۲\alpha} \rightsquigarrow \frac{۱}{۴} + \frac{۴}{۴} = \frac{۱}{\cos^۲\alpha}$$

$$\frac{۵}{۴} = \frac{۱}{\cos^۲\alpha} \rightsquigarrow \cos\alpha = \frac{۲}{\sqrt{۵}} \times \frac{\sqrt{۵}}{\sqrt{۵}} = \frac{۲\sqrt{۵}}{۵}$$

۱۸)



$$\tan ۱۲۰^\circ = -\sqrt{۳} = m$$

$$y = mx + b \rightsquigarrow \frac{۴۵}{۲} = b \Rightarrow mb = \frac{-۴۵\sqrt{۳}}{۲}$$

$$y = x + \frac{۴۵}{۲} \rightsquigarrow \tan\theta = ۱ \rightarrow \theta = ۴۵^\circ \checkmark$$

$\theta = ۲۲۵^\circ$ غ ق ق زیرا زاویه تند است

۱۹) $۱,۲\omega$

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

$$f\left(\frac{۵\pi}{۶}\right) = \cot\frac{۵\pi}{۶} = \cot ۱۵۰^\circ = -\frac{\sqrt{۳}}{۳}$$

$\cot\left(\omega\frac{\pi}{۶}\right) = -\sqrt{۳}$

۱۵)

$$\frac{\sin\left(\frac{۱۷\pi}{۲} + x\right) + \cos\left(\frac{۱۵\pi}{۲} - x\right)}{\cos(۲۴\pi + x) - \sin(۹\pi - x)} = \frac{+\cos x + \sin x}{-\cos x + \sin x}$$

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