۱۹٫۷۵ آفرین (ت) ★

نام و نام خانوادگی ......سورنجم زاده...... پاسخنامه تشریحی تکلیف شماره ..۲۰.. کلاس .....یازدهم ریاضی B......

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

ب) $\dfrac{1 + 3\,\frac{\sin^2 210}{\cos^2 210}}{4\cos^2 330 + 2\cos^2 225} = \dfrac{1 + 3 \times \frac{1}{3}}{4 \times \frac{3}{4} + 2 \times \frac{2}{4}} = \dfrac{1+1}{3+1} = \frac{2}{4} = \frac{1}{2}$

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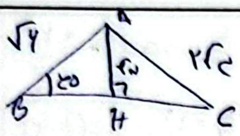
الف)

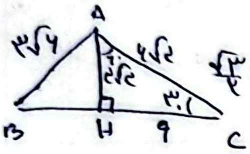


$2\sqrt{2} \Rightarrow AH = \frac{\sqrt{2}}{2} \times \sqrt{6} = \sqrt{3}$

$AH = \frac{1}{2} AC \Rightarrow C = 30^\circ$

$\Rightarrow HC = \frac{\sqrt{3}}{2} \times 2\sqrt{3} = \boxed{3}$

ب)



$\frac{\sqrt{3}}{2} \times AC = 9 \Rightarrow AC = 3\sqrt{3} \times 2 = 6\sqrt{3}$

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

$\sin\hat{B} = \frac{3\sqrt{3}}{3\sqrt{6}} = \frac{\sqrt{2}}{2} \Rightarrow \begin{cases} \hat{B} = 135 \times \\ \hat{B} = 45 \checkmark \end{cases} \xrightarrow{\text{چون در شکل زاویه‌ی حاده رسم شده}} \boxed{\hat{B} = 45^\circ}$

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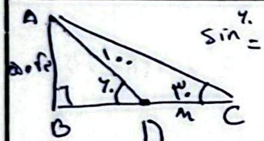
الف)



$\sin 60 = \frac{50\sqrt{3}}{AD} = \frac{\sqrt{3}}{2} \Rightarrow AD = 100$

$\hat{B} = 90^\circ \Rightarrow B\hat{A}D = 30^\circ$ و $\overset{\triangle}{ABC}: \left.\begin{matrix}\hat{B} = 90 \\ \hat{C} = 30\end{matrix}\right\} \Rightarrow A = 60 \Rightarrow D\hat{A}C = 30^\circ$

$D\hat{A}C = D\hat{C}A \Rightarrow AD = DC \Rightarrow \boxed{x = 100}$

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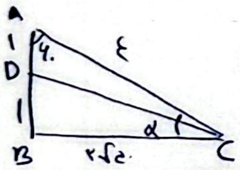
ب)



$\cos 60^\circ = \frac{1}{2} \Rightarrow \frac{2}{AC} = \frac{1}{2} \Rightarrow AC = 4,\quad BC = \frac{\sqrt{3}}{2} \times 4 = 2\sqrt{3}$

$\Rightarrow \cot\alpha = 3\sqrt{3} \rightarrow 1 + \cot^2\alpha = \frac{1}{\sin^2\alpha} \Rightarrow 28 = \frac{1}{\sin^2\alpha} \Rightarrow \sin^2\alpha = \frac{1}{28} \Rightarrow \sin\alpha \begin{cases} -\frac{1}{\sqrt{28}} \times \\ \frac{1}{\sqrt{28}} = \boxed{\frac{\sqrt{28}}{28}} \end{cases}$

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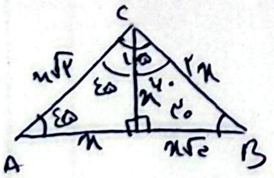
$S_{\overset{\triangle}{ABC}} = \frac{1}{2} \times AC \times BC \times \sin 105 = \frac{1}{2} \times BC \times AB \times \sin 30^\circ = \frac{1}{2} AC \times AB \times \sin 45^\circ$



$AB = x(1+\sqrt{3})$

$AC = x\sqrt{2} \Rightarrow \frac{AB}{AC} = \frac{x(1+\sqrt{3})}{x\sqrt{2}} = \boxed{\frac{\sqrt{2}+\sqrt{6}}{2}}$

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$\hat{B_2} = \hat{B_4} \xrightarrow{\text{متقابل به رأس}} \sin B_2 = \sin B_4$

$\dfrac{S_{ABE}}{S_{BDC}} = \dfrac{\frac{1}{2} \times 4 \times 4 \times \sin \hat{B_2}}{\frac{1}{2} \times 6 \times 6 \times \sin \hat{B_4}} = \boxed{\frac{4}{9}}$

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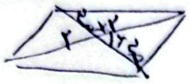
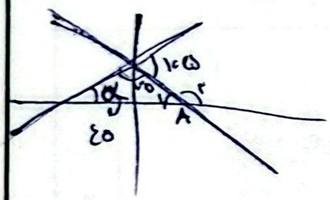
الف) $S_{\text{متوازی الاضلاع}} = 2\times\frac{1}{2}\times 3\times 4\times \sin 120^\circ = 3\times 4\times \frac{\sqrt{3}}{2} = \boxed{6\sqrt{3}}$ ب)  $2\times\frac{1}{2}\times 2\times\frac{3}{2}\times \sin 120^\circ + 2\times\frac{1}{2}\times 2\times\frac{3}{2}\times \sin 60^\circ \xrightarrow{\sin 60^\circ = \sin 120^\circ}$ $4\times\frac{1}{2}\times 2\times\frac{3}{2}\times \sin 60^\circ = 6\times \sin 60^\circ = 6\times\frac{\sqrt{3}}{2} = \boxed{3\sqrt{3}}$ ۲	۶
$y = ax + b$ α زاویه بین خط و جهت مثبت محور $a = \frac{\Delta y}{\Delta x} = \tan\theta \Rightarrow \tan\alpha = \frac{2}{4} = \frac{1}{2}$ $\cos\theta = \frac{2}{\sqrt5}$ چون زاویه تند است $\theta <$ زاویه با جهت مثبت $\Rightarrow \alpha = \theta \Rightarrow \tan\theta = \frac{1}{2} \to 1+\tan^2\theta = \frac{1}{\cos^2\theta} \Rightarrow \cos^2\theta = \frac{4}{5} \Rightarrow \cos\theta = \pm\frac{2}{\sqrt5}$ زاویه با جهت منفی $\Rightarrow \alpha = 180 - \theta \Rightarrow \tan\theta = -\tan\alpha \Rightarrow 1+\tan^2\theta = \frac{1}{\cos^2\theta} \Rightarrow \cos^2\theta = \frac{4}{5} \Rightarrow \cos\theta = \pm\frac{2}{\sqrt5}$ $\Rightarrow \cos\theta = \pm\frac{2}{\sqrt5}$ (حالت مثبت برای زمانی که θ زاویه با جهت + محور x حالت منفی برای زمانی که θ زاویه با جهت - محور x) $\cos\theta = \frac{-2}{\sqrt5} \Leftarrow$ چون زاویه باز است	۷
نقطه‌ای تقاطع $= b =$ عرض از مبدأ محور $\Rightarrow 2y = 3x + 5,\ x = 0 \Rightarrow y = \frac{5}{2} \Rightarrow (0, \frac{5}{2}) \Rightarrow b = \frac{5}{2}$  $2y = 2x + 5 \to y = x + \frac{5}{2} \Rightarrow 1 = \tan\alpha \Rightarrow \alpha = 45$ یا 225 غیرقابل قبول $A_1 = 180 - (\cancel{75 + 45}) = 60 \Rightarrow A_2 = 180 - 60 = 120$ $m = \tan A_2 = \tan 120^\circ = -\sqrt3$ $m = -\sqrt3 \quad b = \frac{5}{2} \Rightarrow \boxed{mb = \frac{-5\sqrt3}{2}}$ ۲	۸
$-\cos\frac{5\pi}{4} \quad +\cos\frac{5\pi}{2} \quad +\cot\frac{5\pi}{4}$ $f(\frac{5\pi}{4}) = \cos(\pi + \frac{5\pi}{4}) + \sin(\frac{\pi}{2} - \frac{5\pi}{4}) + \tan(\frac{3\pi}{2} + \frac{5\pi}{4}) =$ ۱/۷۵ $\cancel{\cos(\frac{5\pi}{4})} - \cancel{\cos(\frac{5\pi}{4})} - \cot(\frac{5\pi}{4}) = +\cot(\frac{5\pi}{4}) = \frac{-\cos 150^\circ}{\sin 150^\circ} =$ $\frac{+\frac{\sqrt3}{2}}{\frac{1}{2}} = \boxed{\sqrt3}$ $f(x) = \underbrace{\cos(\pi + x)}_{-\cos x} + \underbrace{\sin(\frac{\pi}{2} - x)}_{+\cos x} - \tan(\frac{3\pi}{2} + x)$ $+ \cot x$ $\cancel{f(x) = \cot x \longrightarrow f(\frac{5\pi}{4}) = \cot(\frac{5\pi}{4}) = -\sqrt3}$	۹
$\frac{\cos(x) - \sin(x)}{\cos(x) + \sin(x)} = \frac{-(\sin x - \cos x)}{\sin x - \cos x} = \boxed{-1}$ ۲ $\frac{\sin(\frac{\pi}{2} + x) + \cos(\frac{3\pi}{2} - x)}{\cos(\pi + x) - \sin(2\pi - x)}$	۱۰