نام و نام خانوادگی ......[illegible]...... پاسخنامه تشریحی تکلیف شماره ۲۰ کلاس ......دهم ریاضی A......

۲۰

۱

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

$(\frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2})(\frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2}) = \frac{\sqrt{2}-\sqrt{3}}{2} \times \frac{\sqrt{2}+\sqrt{3}}{2} = \frac{2-3}{4} = \boxed{-\frac{1}{4}}$

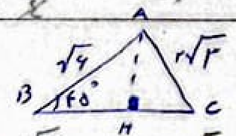
۳

ب) $\dfrac{1 + 3\tan^2 30}{4\cos^2 30 + 4\cos^2 225} = \dfrac{2}{3+1} = \boxed{\frac{1}{2}}$

$(\frac{\sqrt{3}}{3})^2 = \frac{1}{3}$ ، $\frac{3}{4}$ ، $\frac{1}{2}$

۲

الف)



$\boxed{HC = 3}$

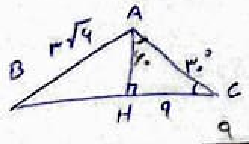
$\frac{AH}{\sqrt{6}} = \frac{\sqrt{2}}{2} \to AH = \frac{\sqrt{12}}{2} \to \frac{12}{4} + HC^2 = 12 \to HC^2 = 9 \to HC = 3$

$\frac{\cancel{\sqrt{18}}\ 3\sqrt{2}}{\ldots} = \frac{\sqrt{2}}{2} = \sin\hat{B}$

$2\sqrt{3} = \sqrt{6}\sin\hat{B}$

۳

ب)

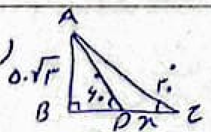


$\boxed{\hat{B} = 45^\circ}$

$\frac{9}{AC} = \frac{\sqrt{3}}{2} \to 18 = AC\sqrt{3} \to AC = \frac{18\sqrt{3}}{3} = 6\sqrt{3} \} \Rightarrow \frac{3\sqrt{6}}{\frac{1}{2}} = \frac{6\sqrt{3}}{\sin\hat{B}}$

۳

الف)

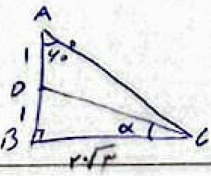


$x = 180 - 80 = \boxed{100}$

$\sqrt{3} = \frac{50\sqrt{3}}{BD} \to BD = 50$ و $\frac{\sqrt{3}}{3} = \frac{50\sqrt{3}}{BC} \to BC = 150$

۳

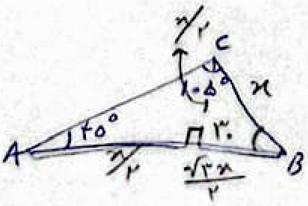
ب)



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

$\frac{BC}{2} = \sqrt{3} \to BC = 2\sqrt{3}$ و فیثاغورث $\to 1 + 12 = DC^2 \to DC = \sqrt{13}$

۴



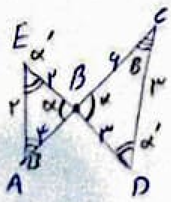
$\frac{AB}{AC} = \dfrac{\frac{\sqrt{3}x + x}{2}}{\frac{\sqrt{2}x}{2}} = \frac{\sqrt{3}x + x}{2} \times \frac{2}{\sqrt{2}x} = \frac{x(\sqrt{3}+1)}{\sqrt{2}x} = \frac{\sqrt{3}+1}{\sqrt{2}}$

گویا کردن $\leftarrow$ $\boxed{\frac{(\sqrt{3}+1)(\sqrt{2})}{2}}$

$\frac{x^2}{4} + \frac{x^2}{4} = AC^2 \to AC = \frac{x}{\sqrt{2}} = \frac{\sqrt{2}x}{2}$

۳

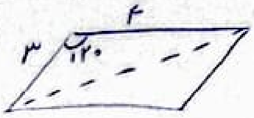
۵



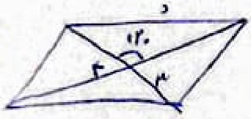
$\dfrac{S\triangle ABE}{S\triangle BCD} = \dfrac{\frac{1}{2} \times \sin\alpha \times 4}{\frac{1}{2} \times \sin\alpha \times \frac{18}{9}} = \frac{4}{9}$

$\frac{9}{4} = \frac{3}{2} = \frac{CD}{EA}$

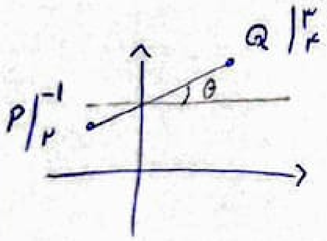
۳

الف) 

$S = \frac{1}{2} \times \sin 120^\circ \times 3 \times 4 = 6 \times \frac{\sqrt{3}}{2} = 3\sqrt{3} \times 2 = \boxed{6\sqrt{3}}$ ۶

ب) 

(۳ و ۴ نصف قطر اند) $S = \frac{1}{2} \times \underbrace{\sin 120^\circ}_{\frac{\sqrt{3}}{2}} \times 3 \times 4 = 6 \times \frac{\sqrt{3}}{2} = \boxed{3\sqrt{3}}$



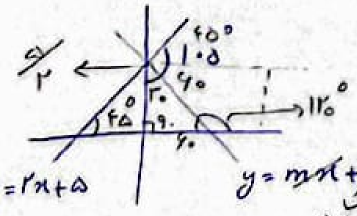
$\cos\theta = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$ ۷

$a = \frac{\Delta y}{\Delta x} \to \frac{2}{4} = \frac{1}{2} = \tan\theta \to \tan^2 + 1 = \frac{5}{4} = \frac{1}{\cos^2\theta} \to 4 = 5\cos^2\theta$

$\cos^2\theta = \frac{4}{5}$

$m\underset{\downarrow}{b} = -\sqrt{3} \times \frac{5}{2} = \boxed{-\frac{5\sqrt{3}}{2}}$

$\frac{5}{2}$

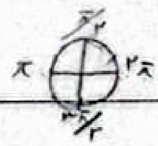


۸

$2y = 2x + 5$ $\qquad y = mx + \underset{\frac{5}{2}}{b}$

$y = x + \frac{5}{2}$ $\qquad \tan 120^\circ = -\sqrt{3} = a = m$

$x = 0 \to y = \frac{5}{2}$ $\qquad \tan\theta = 1 = a \to \theta = 45^\circ$



$if \to f(x) = \underset{-\cos x}{\cos(\pi + x)} + \underset{+\cos x}{\sin(\frac{\pi}{2} - x)} - \underset{+\cot x}{\tan(\frac{3\pi}{2} + x)} = \cot x$

$f(\frac{5\pi}{6}) = f(150^\circ) = \cot 150^\circ \to -\sqrt{3}$ ۹

$f(\frac{2\pi}{3} + \frac{\pi}{6})$

$\frac{\sin(\frac{17\pi}{2} + x) + \cos(\frac{15\pi}{2} - x)}{\cos(3\pi + x) - \sin(6\pi - x)} = \frac{\overset{-(-\cos x + \sin x)}{+\cos x - \sin x}}{-\cos x + \sin x} = -1$

۱۰