«امیرعلی وحید» «گروه A» ۱۸,۲۵

۱- (۲)

$\frac{m-k}{4-(-2)} = \frac{m-k}{\frac{6}{3}} = -\frac{1}{2}$

$m-k=3 \longrightarrow \sqrt{(6)^2 + (\frac{m-k}{2})^2} = \sqrt{45} \longrightarrow S = 45$ ✓

۲- ۲,۷۵

$\sqrt{(-1-x-x)^2+(y+3-y)^2} = 5 \longrightarrow (-1-2x)^2-16=0$

$\sqrt{(4)^2+(-3)^2} = 5$ ✓

$-1-2x = 4 \longrightarrow -\frac{5}{2} = x$ ✗

$-1-2x = -4 \longrightarrow \frac{3}{2} = x$ ✓

$\sqrt{(x-3)^2+(y-1)^2} = \sqrt{(-1-x+1)^2+(y+3-3)^2} \Rightarrow x = \frac{3}{2} \rightarrow \sqrt{(\frac{3}{2}+1)^2+(y-3)^2} = \sqrt{(-1-\frac{3}{2}-1)^2+(y+2)^2}$

$\frac{25}{4} + y^2 + 9 - 6y = \frac{121}{4} + y^2 + 4 + 4y$

$\frac{96}{4} + 12 + 12y = 0$

$12 = -12y \rightarrow y = -1$

$\sqrt{(\frac{3}{2}-3)^2+(-1-1)^2} = \sqrt{\frac{9}{4}+4} \longrightarrow \sqrt{\frac{25}{4}} = \frac{5}{2}$ ✓

(محیط) $P = 15$

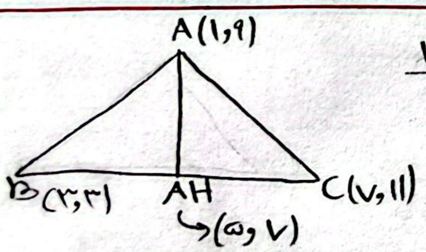
۳- (۲)

$\tan 60° = \sqrt{3} \longrightarrow y = -\frac{2m}{m^2-1}x + \frac{3}{m^2-1} \longrightarrow -\frac{2m}{m^2-1} = \sqrt{3} \rightarrow -2m = \sqrt{3}m^2 - \sqrt{3} \rightarrow \sqrt{3}m^2+2m-\sqrt{3}$

$(m+3)(m-1) \longleftarrow m^2+2m-3$

$\longrightarrow m = \frac{1}{\sqrt{3}}, -\frac{3}{\sqrt{3}} \longrightarrow \frac{4}{\sqrt{3}}$ ✓

۴- (۲)



$H \to (5,7)$

$\frac{11-3}{7-3} = 2 \rightarrow y = 2x-3$ (خط BC)

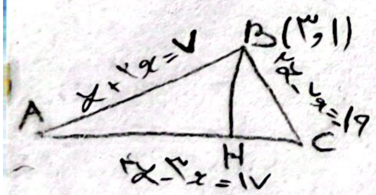
$y = -\frac{1}{2}x + \frac{19}{2}$ (خط A,AH)

$8\times \begin{cases} 2y = 4x-6 \\ 8y = -4x+76 \end{cases}$

$10y = 70 \rightarrow y = 7$, $x = 5$

$\sqrt{(4)^2+(-2)^2} \rightarrow \sqrt{20} = 2\sqrt{5}$ ✓

۵- (۲)



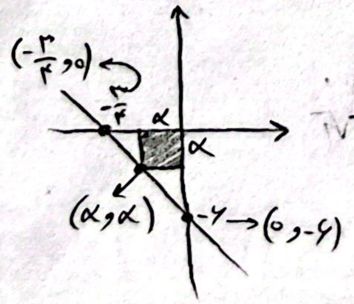
$y + 2x = 7$, $4y - 3x = 17$

$2\times \begin{cases} 2y = 7x - 19 \\ 2y = -4x + 14 \end{cases}$

$0 = 11x - 33 \rightarrow x = 3$, $y = 1$

$\longrightarrow \frac{|-9+4-17|}{\sqrt{16+9}} = \frac{22}{5} = 4.4$ ✓

۶- (۲)



$\frac{-6-0}{0+\frac{3}{4}} \rightarrow -8 \rightarrow y = -8x-6$

$\alpha = -8\alpha - 6$

$9\alpha = -6 \rightarrow \alpha = -\frac{6}{9} = -\frac{2}{3}$

طول مربع $\frac{2}{3}$

$\frac{\sqrt{2}\times 2}{3} = \frac{2\sqrt{2}}{3}$ ✓

۷- (۲)

$y - ax = 1 \rightarrow 2 - a = 1$, $(1,2)$

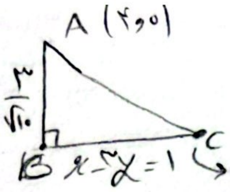
$1 = a$ بیس $\rightarrow y = x$, $y = x+1$ $\rightarrow \frac{|-1+2|}{\sqrt{1+1}} = \frac{1}{\sqrt{2}}$ عرض مستطیل

طول مستطیل $\sqrt{\frac{49}{2}}$, $25 - \frac{1}{2} = \frac{49}{2}$

$\frac{7}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = \frac{7}{2}$

درست!

۸- (۰٫۵)



$\to AB=\frac{|4+0-1|}{\sqrt{1+9}}=\frac{3}{\sqrt{10}}$ ✓

$x-3y=1 \to (4,\frac12) \to \sqrt{(\frac72-4)^2+(\frac12)^2} \to \sqrt{\frac12} \to \frac12-\frac{9}{10}=\frac{10-18}{20}=\frac{-8}{20}=-\frac{2}{5}$

$\frac{2}{5}$ طول BC

$\frac{\frac{2}{5}\times\frac{3}{\sqrt{10}}}{2}=\frac{\frac{6}{5\sqrt{10}}}{2} \Rightarrow \frac{3}{5\sqrt{10}}=\frac{3\sqrt{10}}{50}$

۹- (۲)

$\frac{b-a}{-\frac13+\frac12} \to \frac{b-a}{\frac16}=\sqrt3 \to b-a=\frac{\sqrt3}{6} \to \sqrt{(\frac16)^2+(\frac{\sqrt3}{6})^2}=\sqrt{\frac{4}{36}}=\frac26 \xrightarrow{\text{طول قطر}} \frac{2\sqrt2}{6}=\frac{\sqrt2}{3}$ ✓

$-\frac13+\frac12=\frac{-2+3}{6}=\frac16$

۱۰- (۲)

$r=\sqrt{9+16}=5 \to$ نقطه تماس خط با دایره و نقطه انتهای قطر مختصات $\to m_r=\frac{-4}{-3}=\frac43 \xrightarrow{\text{پس}} m_L=-\frac34$

$m_\perp=\frac43 \to y=\frac43x+\frac{25}{3}$ ، $y=-\frac34x-\frac{25}{4}$ $\xrightarrow{\text{پس}}$ تقاطع دو نقطه $\Rightarrow x=-7 , y=-1$

$(-7)(-1)=7$ ✓

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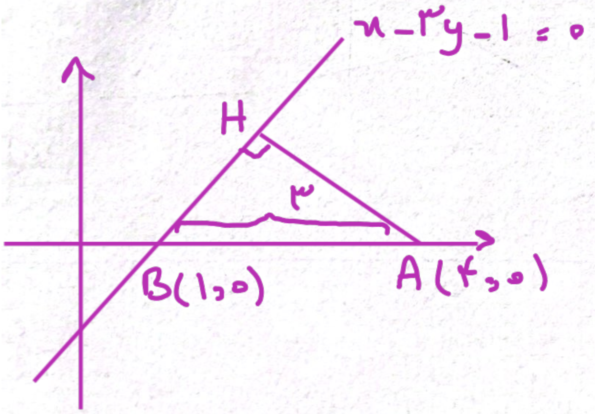
۱۱)



$\frac{9}{10}(AH)^2+(BH)^2=(AB)^2=9 \to BH=\frac{9}{\sqrt{10}}$

$S_\Delta=\frac{9}{\sqrt{10}}\times\frac{3}{\sqrt{10}}\times\frac12=\frac{27}{20}=1{,}35$