باران کاظمی    یازدهم C    تکلیف شماره ۱۶

۱۹٫۷۵

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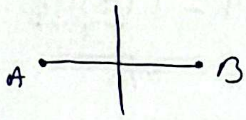
۱-

$A(۴,-۶)$    $B(۲,۸)$

$M = \dfrac{۸-(-۶)}{۲-۴} = \dfrac{۱۴}{-۲} = -۷ \rightarrow m' = \dfrac{۱}{۷}$

$C(۳,۱)$ نقطه وسط $A,B$




$y = \dfrac{۱}{۷}x + b$

$۱ = \dfrac{۳}{۷} + b \Rightarrow b = \dfrac{۴}{۷}$

$\boxed{y = \dfrac{۱}{۷}x + \dfrac{۴}{۷}}$

۲

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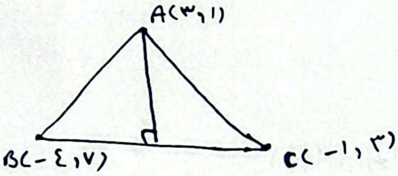
۲-

$A(۳,۱)$    $B(-۴,۷)$    $C(-۱,۳)$




طول $BC = \sqrt{(۷-۳)^۲+(-۴+۱)^۲} = \sqrt{۱۶+۹} = ۵$

معادله $AB$: $y = -\dfrac{۴}{۳}x + b \Rightarrow y = -\dfrac{۴}{۳}x + \dfrac{۵}{۳}$

$\dfrac{۷-۳}{-۴+۱} = \dfrac{۴}{-۳}$

$۳ = \dfrac{۴}{۳} + b$

$b = \dfrac{۵}{۳}$

$\dfrac{\left|۱+۴-\dfrac{۵}{۳}\right|}{\sqrt{۱+\dfrac{۱۶}{۹}}} = \dfrac{\dfrac{۱۰}{۳}}{\dfrac{۵}{۳}} = ۲$

$\dfrac{۱۰}{۳}$    $\dfrac{۲۵}{۹}$

$۵ - ۲ = \boxed{۳}$

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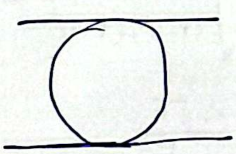
۳-



$۴y - ax - ۲ = ۰$    $\boxed{a = ۲}$

$۴y - ۲x - ۱۴ = ۰$

فاصله دو خط $= ۲r = \dfrac{|-۲+۱۴|}{\sqrt{۱۶+۴}} = \dfrac{۶}{\sqrt{۵}}$

$۲r = \dfrac{۶\sqrt{۵}}{۵} \Rightarrow r = \dfrac{۳\sqrt{۵}}{۵}$

مساحت دایره $= \pi r^۲ = \boxed{\dfrac{۹}{۵}\pi}$

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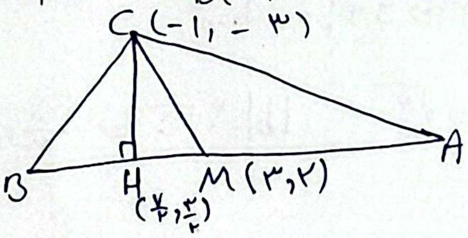
۴-

$A(۲,۳)$    $B(۴,۱)$    $C(-۱,-۳)$




معادله $AB$: $m = \dfrac{۲}{-۲} = -۱$

$y = -x + b \rightarrow \underline{y = -x + ۵}$

$۳ = -۲ + b \Rightarrow b = ۵$

$y' = x + b \Rightarrow y' = x - ۲$

$-۳ = -۱ + b \Rightarrow b = -۲$

$x - ۲ = -x + ۵$

$۲x = ۷ \Rightarrow x = \dfrac{۷}{۲}$

$y' = \dfrac{۷}{۲} - ۲$

$\dfrac{۷-۴}{۲} = \dfrac{۳}{۲}$

۱٫۷۵

$\sqrt{(۳-\tfrac{۷}{۲})^۲ + (۲-\tfrac{۳}{۲})^۲} = \sqrt{\cancel{\tfrac{۱}{۴} + \tfrac{۱}{۴}}} = \boxed{\sqrt{۲}}$

$-\dfrac{۱}{۲}$

$\sqrt{\dfrac{۲}{۴}} = \sqrt{\dfrac{۱}{۲}} = \dfrac{\sqrt{۲}}{۲}$

**۵-**

$$(3m-2)x+(5-m)y-7=0 \Rightarrow m=-\frac{3m-2}{5-m}=\frac{3m-2}{m-5}$$

$$(m+1)x-(2m-4)y+1=0 \Rightarrow m'=\frac{m+1}{2m-4}$$

$$\frac{3m-2}{m-5}=-\frac{2m-4}{m+1} \Rightarrow \frac{3m-2}{m-5}=\frac{4-2m}{m+1} \Rightarrow \cancel{3m^2+3m-2m-2=4m-2m^2-20+10m}$$

$$5m^2-13m+18=0 \qquad \Delta=169-\underbrace{4\underbrace{(5)(18)}_{90}}_{360}<0 \qquad \Delta<0$$

به ازای هیچ مقدار $m$

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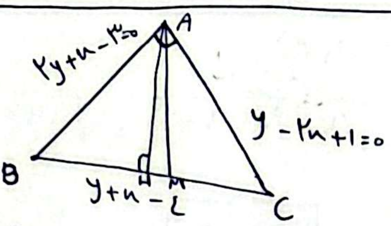
**۶-**

$$\begin{cases} AB: x+2y=3 \\ AC: y=2x-1 \\ BC: x+y=4 \end{cases}$$ عمود بر هم

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$$2x-1=-\frac{x}{2}+\frac{3}{2} \Rightarrow \frac{4x}{2}+\frac{x}{2}=\frac{3}{2}+1 \Rightarrow x=1, y=1 \Rightarrow A(1,1)$$

$$-\frac{x}{2}+\frac{3}{2}=-x+4 \Rightarrow x=5, y=-1 \Rightarrow B(5,-1)$$

$$2x-1=4-x \Rightarrow 3x=5 \Rightarrow x=\frac{5}{3}, y=\frac{7}{3} \to C\left(\frac{5}{3},\frac{7}{3}\right)$$

$$* \; M\left(\frac{10}{3},\frac{2}{3}\right)$$

$$BC \to m=\frac{\frac{10}{3}}{-\frac{10}{3}}=-1 \to m'=1 \Rightarrow y=x+b \Rightarrow y=x$$
$$1=1+b \Rightarrow b=0$$

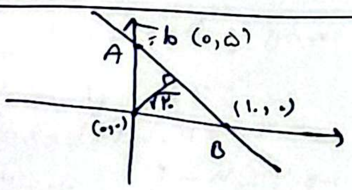
$$x=-x+4 \Rightarrow 2x=4 \Rightarrow x=2 \Rightarrow y=2 \Rightarrow H(2,2) \qquad AH \text{ اندازه } =\sqrt{(2-1)^2+(2-1)^2}=\sqrt{2}$$

$$AM \text{ اندازه } =\sqrt{\underbrace{\left(1-\frac{10}{3}\right)^2}_{-\frac{7}{3}}+\underbrace{\left(1-\frac{2}{3}\right)^2}_{\frac{1}{3}}}=\sqrt{\frac{49}{9}+\frac{1}{9}}=\sqrt{\frac{50}{9}}=\frac{\sqrt{50}}{3}=\frac{5\sqrt{2}}{3}$$

$$\frac{\frac{5\sqrt{2}}{3}}{\sqrt{2}}=\boxed{\frac{5}{3}}$$

**۷-**

$$m=-\frac{1}{2}$$

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$$y=-\frac{1}{2}x+b \Rightarrow y+\frac{1}{2}x-b=0$$

$$\frac{|0+0-b|}{\underbrace{\sqrt{1+\frac{1}{4}}}_{\frac{\sqrt{5}}{2}}}=\sqrt{20} \qquad |b|=2\sqrt{5}\times\frac{\sqrt{5}}{2}=5$$

$$\sqrt{100+25}=\sqrt{125}=\boxed{5\sqrt{5}}$$

**۸-**

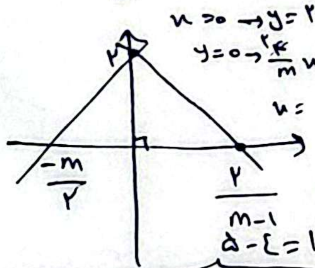
۲

$$y=\frac{4}{m}x+2 \qquad y=x(1-m)+2 \qquad \frac{1}{\cancel{2}}\times\cancel{2}\times\underbrace{\left(\frac{-m}{2}-\frac{2}{m-1}\right)}=\frac{5}{2}$$

$x=0 \to y=2$ $\quad$ $y=0 \to \frac{4}{m}x=-2$ $\quad$ $x=\frac{-m}{2}$

$x=0 \to y=2$ $\quad$ $y=0 \to x=\frac{-2}{1-m}=\frac{2}{m-1}$

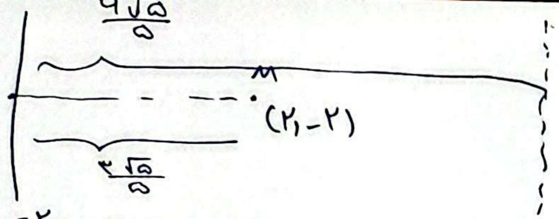
$$\frac{-m^2+m-4}{2m-2}=\frac{5}{2} \qquad 5m-5=-m^2+m-4$$
$$m^2+4m-1=0 \qquad \frac{-4\pm\sqrt{16+4}}{2}=\frac{-4\pm 2\sqrt{5}}{2}=-2\pm\sqrt{5} \quad ②$$




$$① \quad \left(\frac{2}{m-1}+\frac{m}{2}\right)\times\frac{1}{\cancel{2}}\times 2=\frac{5}{\cancel{2}}$$

$$\frac{4+m^2-m}{2m-2}=\frac{5}{2} \qquad 2m^2-2m+8=10m-10$$
$$2m^2-12m+18=0$$
$$m^2-6m+9=0$$
$$(m-3)^2=0 \Rightarrow m=3 \quad ①$$

$$-(3)\underbrace{(\sqrt{5}-2)(\sqrt{5}+2)}_{5-4=1}=\boxed{-3} \text{ جواب}$$




$y=2x-3 \Rightarrow y-2x+3=0$

$$\frac{|\cancel{-2-4+3}|}{\sqrt{1+4}} = \frac{3}{\sqrt5} = \frac{3\sqrt5}{5}$$

$-3$

$$\boxed{y=2x-9}$$

۹- وقتی اندازه خط تا نقطه را می‌سنجیم $\frac{3}{\sqrt5}$ می‌شود

$y=2x+b \rightarrow y-2x-b=0$

$$\frac{|3+b|}{\sqrt{1+\cancel{4}}} = \frac{\cancel{6}}{\cancel{\sqrt5}} \Rightarrow \begin{cases} b+3=\cancel{6} \\ b=3 \\ b+3=-\cancel{6} \\ b=-9 \end{cases}$$

2

$y-2x-3=0$

$-2-4-3 \neq 0$

$-9$

$y-2x+9=0$

$-2-4+9$

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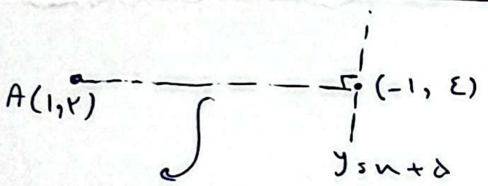
۱۰- 2




$y=-x+b \Rightarrow y=-x+3 \Rightarrow y=4$

$2=-1+b$

$\Rightarrow b=3$

$-x+3=x+5 \Rightarrow 2x=-2$

$x=-1$

$$\boxed{A'(-3,6)}$$

$1+x_{A'}=-2$

$x_{A'}=-3$

$2+y_{A'}=8$

$y_{A'}=6$

$a=-3 \qquad b=6 \qquad 2b-a=12+3=\boxed{15}$