Subject. گیتی بزم A　　　۲۰　　　Day. Month. Year.

① $m=\frac{۸+۶}{۲-۴}=-۷ \rightarrow y=-۷x+b \xrightarrow{\left|\begin{smallmatrix}۲\\۸\end{smallmatrix}\right.} ۸=-۱۴+b \rightarrow b=۲۲ \quad y=-۷x+۲۲$

نقطه وسط $=\left|\begin{matrix}۳\\۱\end{matrix}\right. \quad m'=\frac{۱}{۷} \rightarrow ۱=\frac{۳}{۷}+b \quad b=\frac{۴}{۷} \quad y=\frac{x}{۷}+\frac{۴}{۷}$ $\boxed{۷y=x+۴}$　۲

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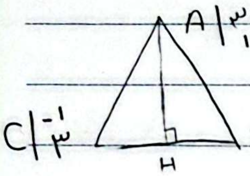
②



$$\left.\begin{aligned} BC_{\text{طول}} &= \sqrt{(-۱+۴)^۲+(۳-۷)^۲}=۵ \\ AH_{\text{طول}} &= \frac{\left|۱+۴-\frac{۵}{۳}\right|}{\sqrt{\frac{۲۵}{۹}}}=\frac{\frac{۱۰}{۳}}{\frac{۵}{۳}}=۲ \end{aligned}\right\} \quad ۵-۲=\boxed{۳}$$

۲

$y_{BC}=-\frac{۴}{۳}x+b \rightarrow y_{BC}=-\frac{۴}{۳}x+\frac{۵}{۳}$

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③ $۲y=۷+x \qquad ۲y=\frac{۹}{۲}x+۱ \qquad$ قطر دایره $=\frac{|۷-۱|}{\sqrt{۱+۴}}=\frac{۶\sqrt{۵}}{۵}$　۲

مساحت $=\frac{۶\sqrt{۵}}{۱۰}\times\frac{\overset{۳}{\cancel{۶}}\sqrt{۵}}{\cancel{۱۰}}\times\pi=\boxed{۱/۸\pi}$

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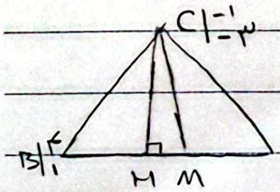
④



$M=\left|\begin{matrix}\frac{۲+۴}{۲}=۳\\ \frac{۳+۱}{۲}=۲\end{matrix}\right. \rightarrow M\left|\begin{matrix}۳\\۲\end{matrix}\right. \quad H\left|\begin{matrix}\frac{۷}{۲}\\ \frac{۳}{۲}\end{matrix}\right. \quad d_{MH}=\sqrt{\left(\frac{۱}{۲}\right)^۲+\left(\frac{۱}{۲}\right)^۲}=\boxed{\frac{\sqrt{۲}}{۲}}$

۲

$y_{AB}=-x+b \rightarrow y_{AB}=-x+۵ \qquad y_{CH}=x+b \rightarrow y_{CH}=x-۲ \rightarrow$ (نقطه برخورد ۲ خط) $x=\frac{۷}{۲} \quad y=\frac{۳}{۲}$

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⑤ $y_۱=\frac{۷}{۵-m}-\frac{(۳m-۲)}{۵-m}x \qquad y_۲=\frac{۱}{۲m-۴}+\frac{m+۱}{۲m-۴}x$

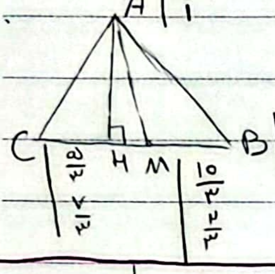
$\frac{m+۱}{۲m-۴}=\frac{۵-m}{۳m-۲} \rightarrow ۱۰m-۲m^۲-۲۰+۴m=۳m^۲-۲m+۳m-۲$　۳

$۵m^۲-۱۳m+۱۸=۰ \rightarrow$ $\boxed{\Delta<۰ \text{ چون } \rightarrow \text{هیچ مقدار}}$

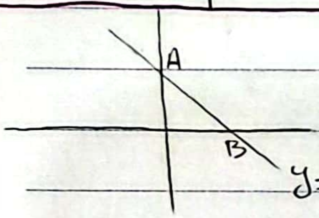
تقاطع دو خط

⑥ $AB \cap AC \Rightarrow \frac{۳}{۲}-\frac{x}{۲}=۲x-۱ \rightarrow \begin{bmatrix}۱\\۱\end{bmatrix}$ | $BC \cap AB \Rightarrow \frac{۳}{۲}-\frac{x}{۲}=۴-x \rightarrow \begin{bmatrix}۵\\-۱\end{bmatrix}$

$AC \cap BC \Rightarrow ۴-x=۲x-۱ \rightarrow \begin{bmatrix}\frac{۵}{۳}\\ \frac{۷}{۳}\end{bmatrix}$



$$\frac{d_{AM}}{d_{AH}} \quad \frac{\sqrt{(\frac{۷}{۳})^۲+(\frac{۱}{۳})^۲}}{\frac{|۱+۱-۴|}{\sqrt{۲}}} = \frac{\frac{۵\cancel{\sqrt{۲}}}{۳}}{\frac{\cancel{\sqrt{۲}}}{۱}} = \boxed{\frac{۵}{۳}}$$



⑦ $\sqrt{۲۰} = \frac{|b|}{\sqrt{\frac{۱}{۴}+\frac{۴}{۴}}} \rightarrow ۲\sqrt{۵} = \frac{\cancel{۲}b}{\sqrt{۵}} \rightarrow b=۵$

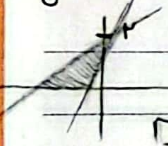
$y=-\frac{x}{۲}+b \quad A\left|\begin{matrix}۰\\y\end{matrix}\right. \rightarrow y=۰+۵ \rightarrow A\left|\begin{matrix}۰\\۵\end{matrix}\right.$

$B\left|\begin{matrix}x\\۰\end{matrix}\right. \rightarrow ۰=-\frac{x}{۲}+۵ \rightarrow x=۱۰ \quad B\left|\begin{matrix}۱۰\\۰\end{matrix}\right.$

$d_{AB}=\sqrt{(۰-۱۰)^۲+(۵)^۲}=\sqrt{۱۲۵}=\boxed{۵\sqrt{۵}}$

⑧ $y=\frac{۴}{m}x+۲ \xrightarrow{y=۰} x=-\frac{m}{۲}$ $\rightarrow \left|-\frac{۲}{۱-m}-\left(-\frac{m}{۲}\right)\right| = \frac{۵}{۲} \rightarrow \frac{-m^۲+m-۴}{۲-۲m}=\pm\frac{۵}{۲}$

$y=(۱-m)x+۲ \xrightarrow{y=۰} x=\frac{-۲}{۱-m}$



$\frac{۲\times\square}{۲}=\frac{۵}{۴}$ $\rightarrow m=۳ \,/\, m=-۲-\sqrt{۵} \,/\, m=-۲+\sqrt{۵}$

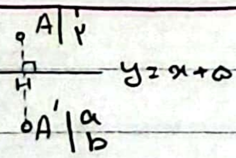
$\square=$ اختلاف طول از مبدأها $=\frac{۵}{۲}$

ضرب $= ۳\underbrace{(-۲-\sqrt{۵})(-۲+\sqrt{۵})}_{۴-۵=-۱} = \boxed{-۳}$

$y=۲x-۳$

$H\left|\begin{matrix}۱\\-۱\end{matrix}\right.$ $M\left|\begin{matrix}۲\\-۲\end{matrix}\right.$ $H'\left|\begin{matrix}x'\\y'\end{matrix}\right.$ قرینه H نسبت به M $\rightarrow x'=۴-۱=۳ \quad y'=-۴+۱=-۳ \quad H'\left|\begin{matrix}۳\\-۳\end{matrix}\right.$ ⑨

$y'=۲x+b \xrightarrow{\left|\begin{matrix}۳\\-۳\end{matrix}\right.} -۳=۶+b \rightarrow b=-۹ \quad \boxed{y'=۲x-۹}$



⑩ $H: x+۵=-x+۳ \rightarrow H\left|\begin{matrix}-۱\\۴\end{matrix}\right. \rightarrow A'\left|\begin{matrix}-۲-۱\\۸-۲\end{matrix}\right. \rightarrow A'\left|\begin{matrix}-۳\\۶\end{matrix}\right.$

$a=-۳ \quad b=۶ \rightarrow ۲b-a=۱۲+۳=\boxed{۱۵}$