

از دو هم بر

تکلیف ۱۶

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B, A نقطه $\rightarrow C\left(\frac{4+2}{2}, \frac{1+7}{2}\right) = C(3, 4)$ $m_{AB} = \frac{\Delta y}{\Delta x} = \frac{1-(-2)}{2-4} = \frac{3}{-2} = -\frac{3}{2}$
 $\Rightarrow m' \cdot m_{AB} = -1 \Rightarrow m' = \frac{2}{3} \Rightarrow y = \frac{2}{3}x + b \xrightarrow{C(3,4)} 1 = \frac{2}{3} + b \Rightarrow b = \frac{1}{3} \Rightarrow y = \frac{2}{3}x + \frac{1}{3}$

$BC = \sqrt{(-1-4)^2 + (2-4)^2} = \sqrt{9+4} = \sqrt{13}$

$m_{BC} = \frac{4-2}{-1-4} = \frac{2}{-5} = -\frac{2}{5}$ $m' \cdot m_{BC} = -1 \Rightarrow m' = \frac{5}{2} \Rightarrow y = \frac{5}{2}x + b \xrightarrow{A(2,1)} 1 = \frac{5}{2} \times 2 + b$

$\Rightarrow b = -\frac{9}{2} \Rightarrow y = \frac{5}{2}x - \frac{9}{2} \rightarrow y = -\frac{5}{2}x + b \xrightarrow{C(3,4)} 4 = -\frac{5}{2} \times 3 + b \Rightarrow b = \frac{17}{2} \Rightarrow y = -\frac{5}{2}x + \frac{17}{2}$

$y = -\frac{5}{2}x + \frac{17}{2} \rightarrow -\frac{5}{2}x + \frac{17}{2} = \frac{5}{2}x - \frac{9}{2} \Rightarrow -10x + 17 = 5x - 9 \Rightarrow 22x = 26 \Rightarrow x = \frac{13}{11}$

$\Rightarrow y = \frac{5}{2} \times \frac{13}{11} - \frac{9}{2} = \frac{65}{22} - \frac{99}{22} = -\frac{34}{22} = -\frac{17}{11} \Rightarrow H\left(\frac{13}{11}, -\frac{17}{11}\right) \Rightarrow AH = \sqrt{\left(\frac{13}{11}-2\right)^2 + \left(-\frac{17}{11}-1\right)^2} = \sqrt{\frac{169}{121} + \frac{676}{121}} = \sqrt{\frac{845}{121}} = \frac{\sqrt{845}}{11}$
 $= \sqrt{5} = 2 \Rightarrow BC - AH = \sqrt{13} - 2$

$\begin{cases} 3y - 2x - 14 = 0 \\ 3y - 2x - 2 = 0 \end{cases} \rightarrow a = 2 \Rightarrow \frac{|-14 - (-2)|}{\sqrt{3^2 + 2^2}} = \frac{12}{\sqrt{13}} = \frac{4}{\sqrt{13}} = 2r \Rightarrow r = \frac{2}{\sqrt{13}}$

$\Rightarrow S = r^2 \pi = \left(\frac{2}{\sqrt{13}}\right)^2 \pi = \frac{4}{13} \pi \approx 0.97 \text{ cm}^2$

$\Rightarrow (m-2)y = (2m-7)x - 1 \Rightarrow y = \left(\frac{2m-7}{m-2}\right)x - \frac{1}{m-2}$
 $\Rightarrow (2m-5)y = (m+1)x + 1 \Rightarrow y = \left(\frac{m+1}{2m-5}\right)x + \frac{1}{2m-5}$

$\Rightarrow \frac{2m-7}{2m-5} = -1 \Rightarrow 2m-7 = -2m+10 \Rightarrow 4m = 17 \Rightarrow m = \frac{17}{4}$

$\Delta < 0 \Rightarrow$ هیچ نقطه اشتراکی ندارند

$m_{AB} = \frac{4-1}{2-4} = \frac{3}{-2} = -\frac{3}{2} \Rightarrow y = -\frac{3}{2}x + b \xrightarrow{A(2,1)} 1 = -\frac{3}{2} \times 2 + b \Rightarrow b = 4 \Rightarrow y = -\frac{3}{2}x + 4$

$m' \cdot m_{AB} = -1 \Rightarrow m' = \frac{2}{3} \Rightarrow y = \frac{2}{3}x + b \xrightarrow{C(3,4)} 4 = \frac{2}{3} \times 3 + b \Rightarrow b = 2 \Rightarrow y = \frac{2}{3}x + 2$

$y = \frac{2}{3}x + 2 \Rightarrow \frac{2}{3}x + 2 = -\frac{3}{2}x + 4 \Rightarrow \frac{13}{6}x = 2 \Rightarrow x = \frac{12}{13} \Rightarrow y = \frac{2}{3} \times \frac{12}{13} + 2 = \frac{8}{13} + 2 = \frac{34}{13}$

$M\left(\frac{12}{13}, \frac{34}{13}\right) = M\left(\frac{12}{13}, \frac{34}{13}\right) \Rightarrow CM = \sqrt{\left(-1-\frac{12}{13}\right)^2 + \left(2-\frac{34}{13}\right)^2} = \sqrt{14 + 22} = \sqrt{36} = 6$
 $CH^2 + HM^2 = CM^2 \Rightarrow 11 + HM^2 = 36 \Rightarrow HM^2 = 25 \Rightarrow HM = 5$

