تکلیف شماره ۱۶ — معین نصری — یازدهم ب B

①

$A(4,-6)$

$B(2,8) \longrightarrow m = \dfrac{8-(-6)}{2-4} = \dfrac{14}{-2} = -7 \xrightarrow{\text{عمودمنصف}} +\dfrac{1}{7}$

نقطه میانی $\longrightarrow \left(\dfrac{4+2}{2}, \dfrac{-6+8}{2}\right) \longrightarrow (3,1) \longrightarrow y-1 = \dfrac{1}{7}(x-3)$

$\Rightarrow \boxed{y = \dfrac{1}{7}x + \dfrac{4}{7}}$

$BC = \sqrt{(-1+4)^2+(3-7)^2} = \sqrt{9+16} = 5$

②

$S_\circ = \dfrac{1}{2}\left(2(7-3)+(-4)(3-1)+(-1)(1-7)\right) = \dfrac{1}{2}(10) = 5 \longrightarrow AH = \dfrac{2\times 5}{5} = \dfrac{10}{5} = 2$

$\Rightarrow BC - AH = 5-2 = 3$

③

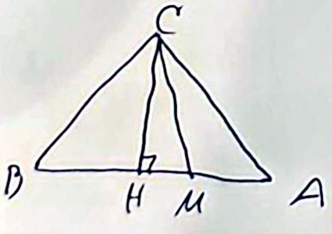
$2y - x = 7 \longrightarrow y = \dfrac{1}{2}x + \dfrac{7}{2}$

$4y = 2x + 2 \longrightarrow y = \dfrac{1}{2}x + \dfrac{1}{2}$

$d = \dfrac{\left|\frac{7}{2}-\frac{1}{2}\right|}{\sqrt{1+\left(\frac{1}{2}\right)^2}} = \dfrac{3}{\sqrt{1+\frac{1}{4}}} = \dfrac{6}{\sqrt{5}} =$ قطر دایره $\xrightarrow{\div 2}$ شعاع $= r = \dfrac{3}{\sqrt{5}}$

مساحت $= \pi r^2 = \pi\left(\dfrac{3}{\sqrt{5}}\right)^2 = \dfrac{9\pi}{5}$

④



$M = \left(\dfrac{4+2}{2}, \dfrac{1+3}{2}\right) \longrightarrow (3,2)$

$m_{AB} = \dfrac{1-3}{4-2} = \dfrac{-2}{2} = -1 \longrightarrow y = -x+5 \longrightarrow m_{CH} = 1 \longrightarrow y = x-2$

$\begin{cases} y = -x+5 \\ y = x-2 \end{cases} \longrightarrow \boxed{x = \dfrac{7}{2} = 3.5} \quad \boxed{y = \dfrac{3}{2} = 1.5} \Rightarrow MH = \sqrt{(3.5-3)^2+(1.5-2)^2} = \dfrac{1}{\sqrt{2}} = \dfrac{\sqrt{2}}{2}$

⑤

$$(3m-2)x+(5-m)y-7=0 \rightarrow y=\frac{-3m+2}{5-m}x+\frac{7}{5-m} \rightarrow m_1=\frac{-3m+2}{5-m} \rightarrow \boxed{m\neq 5}$$

$$(m+1)x-(2m-4)y+1=0 \rightarrow y=\frac{-m-1}{2m-4}x-\frac{1}{2m-4} \rightarrow m_2=\frac{-m-1}{2m-4} \rightarrow \boxed{m\neq 2}$$

$$m_1 \cdot m_2=-1 \rightarrow \left(-\frac{3m-2}{5-m}\right)\left(-\frac{m+1}{2m-4}\right)=-1$$

$$\Rightarrow \frac{(3m-2)(m+1)}{(5-m)(2m-4)}=-1 \rightarrow (3m-2)(m+1)=-(5-m)(2m-4)$$

$$\xrightarrow{\text{با کمی خلاصه کردن}} 5m^2+13m+18=0 \quad \Delta<0 \rightarrow \boxed{\text{هیچ مقدار } m}$$

⑥

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

$AB , AC \rightarrow x+2(2x-1)=3 \rightarrow 5x=5 \rightarrow \boxed{x=1}$

$y=2-1=1 \rightarrow A(1,1)$

$AB , BC = (4-y)+2y=3 \rightarrow 4+y=3 \rightarrow \boxed{y=-1}$

$x=4+1=5 \rightarrow B=(5,-1)$

$\rightarrow AC , BC \rightarrow 4-x=2x-1 \rightarrow 3x=5 \rightarrow \boxed{x=\frac{5}{3}} \rightarrow y=\frac{7}{3}$

$C=\left(\frac{5}{3},\frac{7}{3}\right)$

$AM=\sqrt{\left(\frac{15}{3}-1\right)^2+\left(\frac{7}{3}-1\right)^2}=\sqrt{\frac{50}{9}}=\frac{5\sqrt{2}}{3}$

$AH = d=\frac{|ax+by+c|}{\sqrt{a^2+b^2}}=\frac{1-3}{\sqrt{2}}=\sqrt{2}$

$$\Rightarrow \frac{AM}{AH}=\frac{\frac{5\sqrt{2}}{3}}{\sqrt{2}}=\boxed{\frac{5}{3}}$$

تکلیف شماره ۴ — معین نمری — یازدهم ب ۱۳

(۷)

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

$y = -\frac{1}{2}x + c \to y = -\frac{1}{2}x - 5 \xrightarrow[x=0]{y=0} x = -10 \to (-10, 0)$, $y = -5 \to (0, -5)$

$y = -\frac{1}{2}x - 5 \to x = -10$, $y = -5$

نقطه تقاطع AB را با O حساب می‌کنیم.

$\sqrt{(0-(-10))^2 + (-5-0)^2} = \boxed{5\sqrt{5}}$

$d = \frac{|c|}{\sqrt{1+m^2}} = \sqrt{20} = \frac{|c|}{\sqrt{1+\frac{1}{4}}} = \frac{|c|}{\sqrt{\frac{5}{4}}} = \frac{2|c|}{\sqrt{5}} = 2\sqrt{5} \to 2|c| = 10$ < $\boxed{c = 5}$, $\boxed{c = -5}$

(۸)

$my - 4x = 3m \to y = \frac{4x}{m} + 3 \xrightarrow{y=0} \frac{4x}{m} + 3 = 0 \to x_1(-\frac{3m}{4}, 0)$

$y + mx = x + 3 \to y = x(1-m) + \textcircled{3} \xrightarrow{y=0} x(1-m) + 3 \to x = \frac{-3}{m-1} \to x_2(\frac{-3}{m-1}, 0)$

عرض از مبدا $\textcircled{3}$

$S = \frac{1}{2} \times 3 |x_2 - x_1| \to \frac{5}{3} = |x_2 - x_1| \to \frac{5}{3}\left|-\frac{m}{4} - \frac{3}{m-1}\right|$ → $\frac{5}{3} = -\frac{m}{4} - \frac{3}{m-1} = \frac{5}{3}$ ↳ $-\frac{5}{3} = -\frac{m}{4} - \frac{3}{m-1} = -\frac{5}{3}$

$\to 5m - 5 = -m^2 + m - 4 \to m^2 + 4m - 1 = 0$

$-5m + 5 = -m^2 + m - 4 \to m^2 - 6m + 9 = 0 \to S = -1$, $m = 3$

$S = 3 \times -1 = \textcircled{-3}$

(۹)

$y = 2x - 3 \to x = (2, -3)$

$\to x = 4a - x$, $y = 2b - y$

$x = 4 - x$, $y = -6 - y \to y = -6 - (2x - 3) = -6 - 2x + 3 = -2x - 1 \xrightarrow{x = 4 - x}$

$-2(4 - x) - 1 = -8 + 2x - 1 \xrightarrow{=} \boxed{2x - 9}$

تکلیف شماره ۴   معین نصری   یازدهم تجربی (۱)

$A(1,2)$ (۱۵)

$y = x + 1 \rightarrow x_{A'} = 2x_I - x_A = -2 - 1 = -3$

$y_{A'} = 2y_I - y_A = 6 - 2 = 4 \rightarrow A'(-3,4)$

$2b - a = ? \rightarrow 2(4) - (-3) = 11$

$y - 2 = -x + 1 \rightarrow y = -x + 3$

$\rightarrow -x + 3 = x + 1 \rightarrow -2x = -2 \rightarrow x = -1 \;,\; y = 4$

پ.ن: از مصحح این برگه معذرت می‌خواهم بابت دست خط بدم. واقعیت با رباط
انگشت شست دست راستم پاره شده بود و نتونستم خوانا بنویسم. بسیار شرمنده‌ام!