$۲-۴$

$\frac{۸-۶}{۲}=۱$ $\qquad m' = \frac{۱}{۷} \rightarrow y = ax + b$

$m \rightarrow ۱ = \frac{۱}{۷} \times ۳ + b \rightarrow b = \frac{۴}{۷} \rightarrow y = \frac{۱}{۷}x + \frac{۴}{۳}$

(۲)

$BC = \sqrt{(۴+۱)^۲ + (۷-۳)^۲} = \sqrt{۹+۱۶} = \sqrt{۲۵} = ۵$

$m_{BC} = \frac{۴}{-۳} \rightarrow y = -\frac{۴}{۳}x + b \xrightarrow{(-۴,۷)} b = ۷ - \frac{۱۶}{۳}$

$\rightarrow y = -\frac{۴}{۳}x + \frac{۵}{۳} \qquad \frac{۴}{۳}x + y - \frac{۵}{۳} = ۰ \qquad \boxed{۵ - ۲ = ۳}$

اضلاع

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

(۳)

$-x + ۲y - ۷ = ۰ \xrightarrow{\times ۲} -۲x - ۴y - ۱۴ = ۰$

$-۵x + ۴y$

آیدین تابداری

(1)

$M \Rightarrow \frac{4+2}{2}=3$ $\qquad$ $m=\frac{8-(-6)}{2-4}=-7$

$\frac{8-6}{2}=1$ $\qquad$ $m'=\frac{1}{7} \to y=ax+b$

$\xrightarrow{M} 1=\frac{1}{7}\times 3+b \to b=\frac{4}{7} \to y=\frac{1}{7}x+\frac{4}{7}$

(2)

$BC=\sqrt{(-4+1)^2+(7-3)^2}=\sqrt{9+16}=\sqrt{25}=5$

$m_{BC}=\frac{4}{-3} \to y=-\frac{4}{3}x+b \xrightarrow{(-4,7)} b=7-\frac{16}{3}$

$\to y=-\frac{4}{3}x+\frac{5}{3}$ $\qquad$ $\frac{4}{3}x+y-\frac{5}{3}=0$ $\qquad$ $\boxed{5-2=3}$

ارتفاع

$AH=\frac{\left|\frac{4}{3}\times 3+1-\frac{5}{3}\right|}{\sqrt{1+\frac{16}{9}}}=\frac{\frac{10}{3}}{\frac{5}{3}}=\frac{10}{5}=2$

(3)

$-x+2y-7=0 \xrightarrow{\times 2} -2x-4y-14=0$

$-ax+4y-2=0 \to a=2$ $\qquad$ $\frac{|c-c'|}{\sqrt{a^2+b^2}}=\frac{|-14+2|}{\sqrt{16+4}}=\frac{12}{\sqrt{20}}=\frac{6}{\sqrt{5}}$

$\to \frac{3}{\sqrt{5}}=r$ $\qquad$ $S=\pi r^2=\pi\left(\frac{3}{\sqrt{5}}\right)^2=\frac{9}{5}\pi$

(4

$m_{AB}=\frac{3-1}{2-4}=-1$ $\qquad$ معادله $CH: y=x+b \xrightarrow{C} -1+b=-3$

$b=-2$

$\to m_{CH}=1$ $\qquad$ $y=x-2 \to y-x+2=0$

$MH=\frac{|2-3+2|}{\sqrt{1+1}}=\frac{\sqrt{2}}{2}$ $\qquad$ $M\left|\begin{array}{l}\frac{4+2}{2}=3\\ \frac{1+3}{2}=2\end{array}\right.$

(5

$m \,,\, m' = -\frac{1}{m} \rightarrow m \times m' = -1$

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

$+2 = -10m + 3m^2 + 20 - 4m \qquad -5m^2 + 13m - 18 = 0$

$\rightarrow m^2 - 13m + 90 = 0 \qquad \Delta < 0$ ریشه ندارد. مستطیل ندارد

(6

$\left.\begin{array}{l} 2y = 3 - x \\ 2y = 4x - 2 \end{array}\right\} \rightarrow 3 - x = 4x - 2 \rightarrow x = 1 \quad y = 1 \qquad A\left|\begin{array}{l}1\\1\end{array}\right.$

$\left.\begin{array}{l} y = 2x - 1 \\ y = 4 - x \end{array}\right\} \rightarrow 2x - 1 = 4 - x \rightarrow x = \frac{5}{3} \,,\, y = \frac{7}{3} \qquad C\left|\begin{array}{l}\frac{5}{3}\\ \frac{7}{3}\end{array}\right.$

$\left.\begin{array}{l} 2y = 3 - x \\ 2y = 8 - 2x \end{array}\right\} \rightarrow 3 - x = 8 - 2x \rightarrow x = 5 \,,\, y = -1 \qquad B = \begin{array}{l}5\\-1\end{array}$

$M = \left|\begin{array}{l}\frac{10}{3}\\ \frac{2}{3}\end{array}\right. \qquad AM = \sqrt{(\frac{7}{3})^2 + (\frac{-1}{3})^2} = \frac{\sqrt{50}}{3}$

$m = -1 \rightarrow y = -x + 4 \rightarrow AH = \frac{|1 + 1 - 4|}{\sqrt{2}} = \frac{2}{\sqrt{2}}$

$\boxed{\frac{\frac{8\sqrt{5}}{3}}{\frac{2}{\sqrt{2}}} = \frac{\sqrt{1000}}{6} = \frac{10}{6} = \frac{5}{3}}$

(7

$\frac{x}{A} + \frac{y}{B} = 1 \qquad AB = xB + yA$

$\frac{B}{A} = \frac{1}{2} \rightarrow A = 2B \qquad B = 5 \,,\, A = 10$

$\frac{|AB|}{\sqrt{A^2 + B^2}} = \sqrt{20} \qquad \frac{2B^2}{\sqrt{5B^2}} = \sqrt{20} \quad 2B = \sqrt{100} \qquad \sqrt{25 + 100} = 5\sqrt{5}$

(8

$\frac{\alpha + 0}{2} = 1 \rightarrow \alpha = 2 \qquad y - 2x + 3 = 0 \rightarrow m = 2$

$\frac{\beta - 3}{2} = -2 \rightarrow \beta = -1 \qquad y = 2x + b \xrightarrow{(4,-1)} 8 + b = -1$

$y = 2x - 9$

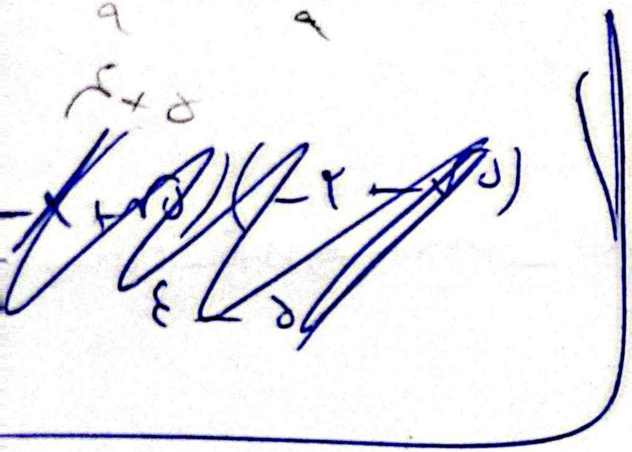
۱۵

$y = x + ۵ \rightarrow y - x - ۵ = ۰$

$m = \frac{+۱}{۱} = ۱$

$m' = -۱ \qquad y = -x + b \rightarrow -۱ + b = ۲$

$b = ۳$



$y = -x + ۳$

$-x + ۳ = x + ۵ \rightarrow x = -۱$

$y = ۴$

$\frac{۲ + b}{۲} = ۴ \qquad b = ۶ \qquad \frac{۱ + a}{۲} = -۱ \qquad \boxed{۱۲ + ۳ = ۱۵}$

$a = -۳ \qquad a + b$

$\frac{x}{A} + \frac{y}{?} = ۱ \qquad AB = x B + y A$

$$\frac{|AB|}{\sqrt{A^2+B^2}} = \sqrt{20} \qquad \frac{2B^2}{\sqrt{5B^2}} = \sqrt{20} \qquad 2B = \sqrt{100}$$

$$B = 5 \to A = 10$$

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

(۸

$$my - 4m + 2m \to y = \frac{4}{m}x + 2$$

$$y - mx = x + 2 \to y = (1-m)x + 2$$

$$\to \frac{4}{m}x + 2 = (1-m)x + 2$$

$$x = 0 \quad y = 2$$

$$A(0, 2)$$

$$y = (1-m)x + 2 = 0 \to x = -\frac{m}{2} \to m\left(-\frac{m}{2}, 0\right)$$

$$y = (1-m)x + 2 = 0 \to x = -\frac{2}{1-m} = \frac{2}{m-1} \to C\left(\frac{2}{m-1}, 0\right)$$

$$S = \frac{\left|\frac{4}{m-1} + \frac{m(m-1)}{m-1}\right|}{2} = \frac{5}{2}$$

$$\frac{۴+m(m-۱)}{m-۱}=۵ \rightarrow ۵m-۵=۴+m^۲-m \rightarrow m^۲-۶m+۹=۰$$

$$(m-۳)^۲=۰ \qquad m=۳ \qquad \frac{۴+m(m-۱)}{m-۱}=-۵ \rightarrow -۵m+۵=۴+m^۲-m$$

$$\rightarrow m^۲-m+۹ \rightarrow \cancel{m^۲+۴m-۱=۰}$$

$$\boxed{p=۹}$$

$$\cancel{m=\frac{-۴\pm ۲\sqrt{۵}}{۲}} \qquad \cancel{p=۱}$$