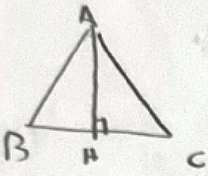
$M \left| \begin{matrix} \frac{x_A + x_B}{2} \\ \frac{y_A + y_B}{2} \end{matrix} \right. \to M \left| \begin{matrix} 3 \\ 1 \end{matrix} \right. \quad m_{AB} = \frac{-6-8}{4-2} = -\frac{14}{2} = -7 \to m = \frac{1}{7}$

$y - 1 = \frac{1}{7}(x-3) = y - 1 = \frac{1}{7}x - \frac{3}{7} \to y = \frac{1}{7}x + \frac{4}{7} \xrightarrow{\times 7} \boxed{7y = x + 4 = 0}$



$BC = \sqrt{9+16} = 5$

$\to m_{BC} = \frac{7-3}{-4+1} = \frac{4}{-3} \to m_{AH} = \frac{3}{4}$ (2

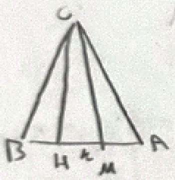
$y - 3 = \frac{-4}{3}(x+1) = y - 3 = -\frac{4}{3}x - \frac{4}{3} \to y = \frac{-4}{3}x + \frac{5}{3}$

$\xrightarrow{\times 3} 3y = -4x + 5 \to A$ نقطه $\to d = \frac{|12+3-5|}{5} = \frac{10}{5} = 2 \quad 5 - 2 = \boxed{3}$

$\frac{4}{2} = \frac{+a}{+1} \quad \boxed{a = 2} \to \begin{matrix} 2y - 2x - 2 = 0 \\ 4y - 2x - 14 = 0 \end{matrix} \quad d = \frac{|-14+2|}{\sqrt{4+16}} = \frac{12}{\sqrt{20}} = \frac{6}{\sqrt{5}}$ (3

$s = \pi r^2 = \boxed{\frac{9}{5}\pi}$

$\downarrow$ $2\sqrt{5}$



$M \left| \begin{matrix} \frac{x_A + x_B}{2} \\ \frac{y_A + y_B}{2} \end{matrix} \right. \quad M \left| \begin{matrix} 3 \\ 2 \end{matrix} \right. \quad m_{AB} = \frac{3-1}{2-4} = -1$

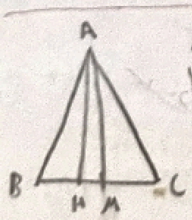
$y - 3 = -1(x-2) = y - 3 = -x + 2 \to y = -x + 5 \to m_{CH} = 1$ (4

$y + 3 = x + 1 \to y = x - 2 \to x - 2 = -x + 5 \to x = 3{,}5 \quad y = 1{,}5 \to \sqrt{\frac{1}{4} + \frac{1}{4}} = \sqrt{\frac{1}{2}} = \sqrt{2}$

$m_1 \times m_2 = -1 \to \frac{-m-1}{-2m+4} \times \frac{2-3m}{5-m} = -1 \to \frac{-m-1}{-2m+4} = \frac{m-5}{2-3m} \to -2m^2 + 4m + 10m - 20$

$-2m^2 + 4m + 10m - 20 = -2m - 2 + 3m^2 + 3m \to -2m^2 + 14m - 20 = 3m^2 + m - 2$ (5

$5m^2 - 13m + 18 = 0 \quad \Delta < 0 \quad m$ نیست



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

$A = (1,1) \quad x = -\frac{5}{-5} = 1 \quad y = \frac{-5}{-5} = 1$

$\begin{matrix} \cancel{x} + 2y = 3 \\ \cancel{-x} + y = -4 \end{matrix}$ (6

$y = -1$
$x = 5$

$B = (5, -1)$

$\begin{matrix} 2x - y = 1 \\ x + y = 4 \end{matrix}$

$3x = 5$
$x = \frac{5}{3} \quad y = \frac{7}{3}$

$C = \left(\frac{5}{2}, \frac{7}{3}\right)$

$M = \left(\frac{10}{3}, \frac{2}{3}\right) \to AM = \sqrt{\left(\frac{7}{3}\right)^2 + \left(\frac{1}{3}\right)^2} = \sqrt{\frac{49}{9} + \frac{1}{9}} = \frac{50}{9} = \frac{5}{3}\sqrt{2} \quad AH = \sqrt{2}$

$-y + 1 = -x + 5 \to y = -x + 4$

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

فرزاد قشونی

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

$\frac{\sqrt5}{2}$

$\frac{|-b|}{\underbrace{\sqrt{1+\frac{1}{4}}}_{\sqrt{\frac{5}{4}}}}=\sqrt{20} \quad b=2\sqrt5\times\sqrt{\frac{5}{4}}=5 \quad y=+b \to y=5 \quad A=(0,5)$

$0=-\frac{1}{2}x+5 \to B=(10,0)$

$\sqrt{25+100}=\boxed{5\sqrt5}$

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8)

$y=\frac{4}{m}x+2 \to \begin{matrix} x=0, y=2 \\ y=0, x=-\frac{m}{2}\end{matrix} \qquad \begin{matrix} x=0, y=2 \\ y=0, x=\frac{2}{m-1}\end{matrix} \leftarrow y=x(1-m)+2$

$\to \frac{1}{2}\times2\times(-\frac{m}{2}-\frac{2}{m-1})=\frac{5}{2} \to -\frac{m}{2}-\frac{2}{m-1}=\frac{5}{2} \xrightarrow{\times2(m-1)} -m^2+m-4=5m-5$

$m^2+4m-1=0 \quad (m=\sqrt{16+4}=2\sqrt5$

$\frac{-4\pm2\sqrt5}{2} \to m=\boxed{-2\pm\sqrt5}$

$\frac{1}{2}\times2(\frac{2}{m-1}+\frac{m}{2})=\frac{5}{2} \to 2m^2-12m+18=0 \to m^2-6m+9=0 \quad (m-3)^2=0 \quad m=3$

$-3\times(-2-\sqrt5)(-2+\sqrt5)=-3$

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9)

$y=2x-3 \to y-2x+3=0 \quad \frac{|2-4+3|}{\sqrt{1+4}}=\frac{3}{\sqrt5} \quad |y-2x-b=0 \quad \frac{|3+b|}{\sqrt{1+4}}=\frac{6}{\sqrt5}$

$b \to 3$

$b \to -9$

$y=+2x-9 \quad d=\frac{|2-4+9|}{\sqrt5}=\frac{3}{\sqrt5}$ ✓

$y=+2x+3$

$d=\frac{|2-4-3|}{\sqrt5}\neq\frac{3}{\sqrt5}$ ✗

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10)

$y=x+b \to y=x+3 \quad y=4 \to M=(-1,4)$

$-x+3=x+5 \to x=-1$

$\frac{1+x_{A'}}{2}=-2 \quad x_A=-3$

$3+y_{A'}=8 \quad y_A=4$

$A'=(-3,6) \quad 1b-a=12+3=\boxed{15}$