

$$\overline{AB} \text{ وسط } M = \left(\frac{4+2}{2}, \frac{1+(-1)}{2} \right) = (3, 0)$$

$$\overline{AB} \text{ شیب } = m = \frac{1-(-1)}{2-4} = \frac{-2}{-2} = 1 \Rightarrow m' = -1$$

$$\text{معادله خط } = (y-0) = -1(x-3) \Rightarrow \boxed{y = -x + 3}$$

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$$\overline{BC} = \sqrt{(-1-(-1))^2 + (2-3)^2} = \sqrt{0+1} = 1$$

$$m_{BC} = \frac{2-3}{-1-(-1)} = \frac{-1}{0} \Rightarrow y-(-1) = \frac{-1}{0}(x-3)$$

$$\Rightarrow \frac{1}{2}x + y - 3 = 0 \quad AH = \frac{3+1-3}{\sqrt{1+\frac{1}{4}}} = \frac{1}{\frac{3}{2}} = \boxed{\frac{2}{3}}$$

$$\omega - \frac{2}{3} = \boxed{\frac{19}{3}}$$

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$$\begin{aligned} -x + 2y - 1 &= 0 \\ 2x - 4y + 2 &= 0 \end{aligned} \Rightarrow \frac{-1}{2} = \frac{2}{-4} \Rightarrow \boxed{x = 1}$$

$$2x - 4y + 2 = 0, \quad \begin{aligned} -x + 2y - 1 &= 0 \\ 2x - 4y + 2 &= 0 \end{aligned} \Rightarrow \text{فاصله} = \frac{|1(-1) - 2|}{\sqrt{2^2 + (-4)^2}} = \frac{3}{\sqrt{20}} =$$

$$\frac{3}{\sqrt{20}} = 2r \Rightarrow r = \frac{3}{2\sqrt{20}}$$

$$S = \pi r^2 = \pi \frac{9}{4 \cdot 20} = \boxed{\frac{9\pi}{80}}$$

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$$m_{AB} = \frac{2-1}{1-4} = -\frac{1}{3} \quad m_{CH} = 1 \Rightarrow \text{فاصله} = \frac{|y-(-3)|}{\sqrt{1+1}} = \frac{1}{\sqrt{2}}(x-(-1))$$

$$\text{فاصله } AB: y-3 = -1(x-2) \Rightarrow \boxed{y = -x + 5}$$

$$CH \cap AB = H \Rightarrow \begin{cases} y = x-2 \\ y = -x+5 \end{cases} \Rightarrow \begin{cases} x = 1.5 \\ y = 1.5 \end{cases} \Rightarrow H = (1.5, 1.5)$$

$$m = \left(\frac{2+1}{1+4}, \frac{3+1}{1+4} \right) = (3, 2)$$

$$m_H = \sqrt{(3-1.5)^2 + (2-1.5)^2} = \sqrt{\left(\frac{3}{2}\right)^2 + \left(\frac{1}{2}\right)^2} = \sqrt{\frac{10}{4}} = \boxed{\frac{\sqrt{10}}{2}}$$

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$$(m+1)(3m-2) + (2m-1)(m-5) = 0$$

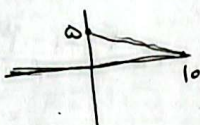
$$3m^2 + m - 2 + 2m^2 - 11m + 5 = 0$$

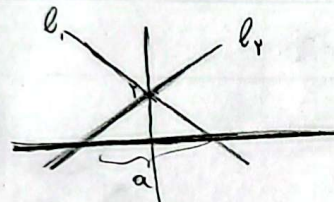
$$\Rightarrow 5m^2 - 10m + 3 = 0$$

$$\Delta < 0 \Rightarrow m \text{ هیچ مقدار}$$

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$$\begin{aligned}
 AB \cap BC = B &\Rightarrow x+y=3 \Rightarrow x=0, y=3 \Rightarrow B=(0,3) \\
 AB \cap AC = A &\Rightarrow x+y=3 \Rightarrow x=1, y=1 \Rightarrow A=(1,1) \\
 AC \cap BC = C &\Rightarrow y=x-1 \Rightarrow x=\frac{3}{2}, y=\frac{1}{2} \Rightarrow C=(\frac{3}{2}, \frac{1}{2}) \\
 m &= (\frac{10}{4}, \frac{1}{4}) \\
 \frac{Am}{AH} &= \frac{\sqrt{(\frac{10}{4})^2 + (\frac{1}{4})^2}}{\frac{1+1-3}{\sqrt{4}}} = \frac{\sqrt{1(\frac{100}{16} + \frac{1}{16})}}{-1} = \frac{\sqrt{\frac{101}{16}}}{-1} = -\frac{\sqrt{101}}{4} = \boxed{-\frac{\sqrt{101}}{4}}
 \end{aligned}$$

$$\begin{aligned}
 -\frac{1}{4}x - y + c &= 0 \\
 \frac{c}{\sqrt{1+\frac{1}{16}}} &= \sqrt{10} \Rightarrow c = \sqrt{10} = \omega \\
 y &= -\frac{1}{4}x + \omega \\
 x=0 &\Rightarrow y=\omega \quad (0, \omega) \\
 y=0 &\Rightarrow x=4 \quad (4, 0) \\
 \sqrt{10^2 + \omega^2} &= \sqrt{10\omega} = \boxed{\omega\sqrt{10}}
 \end{aligned}$$




$$\begin{aligned}
 y_1 &= (1-m)x + 4 \\
 y_2 &= \frac{f}{m}x + 4 \\
 S &= \frac{y_0}{y} = \frac{\omega}{4} \Rightarrow x = \frac{\omega}{4} \\
 x_1 - x_2 &= -4(\frac{1}{1-m} + \frac{m}{f}) = \frac{\omega}{4} \\
 \frac{1}{1-m} + \frac{m}{f} &= \frac{\omega}{f} \Rightarrow f+m(1-m) = -\omega(1-m) \\
 m^2 + fm - q &= 0 \\
 f+m-m^2 &= -\omega+\omega m
 \end{aligned}$$

ضرب في -1 $\Rightarrow \boxed{-9}$

$$\begin{aligned}
 y' &= y-4 \Rightarrow y=y'+4 \\
 x' &= x+4 \Rightarrow x=x'-4 \\
 y &= 4x-3 \Rightarrow y'+4 = 4(x'-4)-3 = 4x'-19 \\
 y' &= 4x'-19
 \end{aligned}$$

$$\begin{aligned}
 m=1 &\Rightarrow m'=-1 \Rightarrow \text{مماس خط } (1,1) \text{ في } (1,1) \Rightarrow (y-1) = -1(x-1) \Rightarrow y = -x+2 \\
 y &= -x+2 \\
 y &= x+\omega \Rightarrow \boxed{y=4, x=-1} \Rightarrow m=(-1, 4) \\
 A' &= (-1 \times 4 - 1, 4 \times 4 - 2) = \boxed{(-5, 14)} = (a, b) \\
 4b-a &= 4 \times 4 - (-5) = \boxed{21}
 \end{aligned}$$
