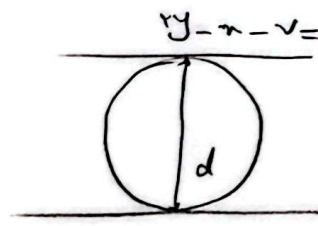
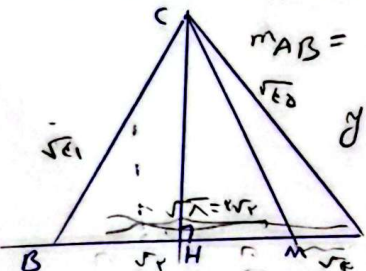


نقطه شماره ۱۹: $m = (\frac{1+\varepsilon}{r}, \frac{1-\gamma}{r}) = m(3, 1)$
 $A(4, -4) / B(2, 1)$
 $AB: \frac{y-1}{x-2} = \frac{1-(-4)}{2-\varepsilon} = -5$
 $y-1 = \frac{1}{5}(x-2) \Rightarrow x-5y+4=0$ باشد

$A(3, 1) \quad B(-2, 5) \quad C(-1, 2)$ BC خط متوجه: $BC = \sqrt{(-1+2)^2 + (2-5)^2} = \sqrt{5}$
 AH خط متوجه: $\frac{y-5}{x+2} = \frac{2-5}{-1+2} = -3 \Rightarrow y-5 = -3(x+2) \Rightarrow 3x+y-1=0$
 BC از A فاصله: $d = \frac{|3(-1)+1-1|}{\sqrt{10}} = 1 \Rightarrow AH=r$ $BC-AH = \sqrt{5}-1 = \frac{2}{\sqrt{5}}$ جواب

$2y-x=5 \quad / \quad 4y=3x+2$

 $d = \frac{|ax_1+by_1+c|}{\sqrt{a^2+b^2}} = \frac{|-1(0)+2(\frac{1}{4})-5|}{\sqrt{1+1}} = \frac{4}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{2}}{2}$

$A(2, 2) / B(2, 1) / C(-1, 3)$ $m = (\frac{2+r}{r}, \frac{1+r}{r}) = (3, 2)$

 $m_{AB} = \frac{1-3}{2-2} = \frac{-1}{-x+2}$
 $y-3 = -1(x-2) \Rightarrow y = -x+5$
 $y-2 = 1(x+1) \Rightarrow y = x+3$
 $x+3 = -x+5 \Rightarrow 2x=2 \Rightarrow x=1$
 $y = 1+3 = 4 \Rightarrow H(\frac{1}{2}, \frac{9}{2})$

$(\frac{m+1}{a})x - (\frac{r-m-\varepsilon}{b})y + 1 = 0$
 $(\frac{cm-r}{a})x + (\frac{a-m}{b})y - \frac{v}{c} = 0$
 $m_1 = \frac{-(r-cm)}{a-m}$
 $m_2 = y = \frac{m+1}{r-rm}x + \frac{1}{r-rm} \Rightarrow m_2 = \frac{m+1}{r-rm}$
 $(\frac{-(r-cm)}{a-m} \times \frac{m+1}{r-rm}) = (1) \Rightarrow \frac{(-r+cm)(m+1)}{(a-m)(r-rm)} \Rightarrow \frac{cm^2+m-r}{rm^2-1\epsilon m+r} = -1 \Rightarrow$
 $cm^2+m-r = -rm^2+1\epsilon m-r \Rightarrow am^2-1\epsilon m+1\lambda = 0$
 $\Delta = b^2-4ac \Rightarrow 149-44 = -141$
 $\Delta < 0$
 هیچ جوابی برای m وجود ندارد.

$$\begin{cases} AB: x+2y=c \\ AC: y=2x-1 \\ BC: x+y=2 \end{cases} \quad \begin{cases} x+2y=c \\ y=2x-1 \end{cases} \quad x+2(2x-1)=c \Rightarrow x+4x-2=c \Rightarrow \boxed{x=1} \quad y=2(1)-1=1 \quad \boxed{A(1,1)}$$

$$BC, AB: \begin{cases} x+2y=c \\ x+y=2 \end{cases} \Rightarrow (x+2y)-(x+y)=c-2 \Rightarrow y=-1 \quad x+(-1)=2 \Rightarrow x=3 \quad \boxed{B(3,-1)}$$

$$BC, AC: \begin{cases} y=2x-1 \\ x+y=2 \end{cases} \Rightarrow x+(2x-1)=2 \Rightarrow 3x=3 \Rightarrow x=1 \quad y=2(1)-1=1 \quad \boxed{C(1,1)}$$

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

$$AM = \sqrt{\left(1-\frac{4}{2}\right)^2 + \left(1-\frac{0}{2}\right)^2} = \frac{\sqrt{2}}{2}$$

$$\frac{AM}{AH} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1$$

المسافة من A إلى BC:

$$AH = \frac{|1+1-2|}{\sqrt{1^2+1^2}} = \frac{0}{\sqrt{2}} = 0$$

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

$$d = \frac{|c|}{\sqrt{a^2+b^2}} = \frac{|-2b|}{\sqrt{1+4}} = \frac{4}{\sqrt{5}} = \frac{4\sqrt{5}}{5}$$

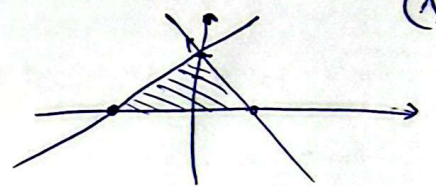
$$AB = \sqrt{(1-0)^2 + (0-0)^2} = \sqrt{1} = 1$$

$$B(1,0)$$

المسافة من A إلى BC:

$$A(0,0)$$

$$\begin{cases} my - rx = rm \\ y + mx = x + r \end{cases} \Rightarrow \begin{cases} my = rm + rx \Rightarrow y = r + \frac{r}{m}x \\ y = x + r - mx \Rightarrow y = x(1-m) + r \end{cases}$$



$$\frac{y-r}{1-m} = x \Rightarrow x_1 = \frac{r}{1-m}$$

$$x_2 - x_1 = \frac{r}{1-m} \Rightarrow \left| \frac{-r}{1-m} + \frac{m}{r} \right| = \frac{r}{1-m}$$

$$\frac{-r + m + m^2}{r - rm} = \frac{r}{1-m} \Rightarrow rm^2 - 1rm + 1 = 0$$

$$\Delta = b^2 - 4ac \Rightarrow 1 - 4(1)(1) = -3$$

$$m = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \frac{1 \pm \sqrt{-3}}{2} = \frac{1 \pm i\sqrt{3}}{2}$$

المسافة من A إلى BC:

$$y = 2x - 2$$

$$-x - y' = 2(1 - x') - 2 \Rightarrow -x - y' = 1 - 2x' - 2 \Rightarrow$$

$$y' = 2x' - 1 \leadsto \boxed{y = 2x - 1}$$

عابر

(9)

$$A(1, 2)$$

$$A'(a, b)$$

$$ax + by + c = 0 \Rightarrow -x + y - a = 0$$

(10)

$$y = x + a$$

$$0 = y - x - a$$

$$a = -1, b = 1, c = -a$$

$$x' = x_0 - \frac{(ax_0 + by_0 + c) \cdot a}{b^2 + a^2}$$

$$y' = y_0 - \frac{(ax_0 + by_0 + c) \cdot b}{a^2 + b^2}$$

$$ax_0 + by_0 + c = (1)(-1) + 2(1) - a = -1$$

$$a^2 + b^2 = 2$$

$$\text{فقط قرینه: } x' = 1 - \frac{2(-1)(-1)}{2} = -1$$

$$y' = 2 - \frac{2(1)(-1)}{2} = 4$$

$$A'(-1, 4)$$

$$2b - a = 2(4) - (-1)$$

$$= 9$$

ب

بیا فرض