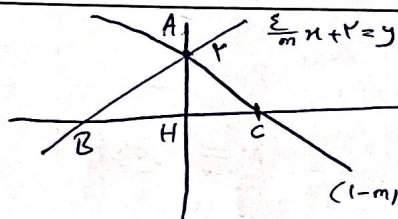


$A \in \overleftrightarrow{BC} \rightarrow 2x-1 = -\frac{1}{2}x + \frac{2}{1} \Rightarrow \frac{5}{2}x = 3 \Rightarrow x = \frac{6}{5}$
 $C \in \overleftrightarrow{AB} \rightarrow 2x-1 = -x+2 \Rightarrow 3x = 3 \Rightarrow x = 1$
 $B \in \overleftrightarrow{AC} \rightarrow -x+2 = -\frac{1}{2}x + \frac{2}{1} \Rightarrow -\frac{1}{2}x = 0 \Rightarrow x = 0$
 $M \left(\frac{1+0}{2}, \frac{2+2}{2} \right) = \left(\frac{1}{2}, 2 \right)$
 $AH = \frac{|1 - (1) - (1) + 2|}{\sqrt{1+1}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$
 $AM = \sqrt{\left(\frac{1}{2} - 1\right)^2 + \left(2 - 2\right)^2} = \frac{1}{2}$
 $\frac{AM}{AH} = \frac{\frac{1}{2}}{\frac{\sqrt{2}}{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

6

$\frac{0}{0} \left| \frac{0}{0} \right| \rightarrow \frac{0+0 \cdot c}{\sqrt{c^2+1}} = \frac{|c|}{\sqrt{c^2+1}} \rightarrow d = \frac{2|c|}{\sqrt{c^2+1}} = 2\sqrt{c^2+1} \Rightarrow$
 $2|c| = 10 \Rightarrow |c| = 5$
 $\Rightarrow (0, c) \Rightarrow (0, 5)$
 $\Rightarrow (c, 0) \Rightarrow (5, 0)$
 $AB = \sqrt{c^2 + 5c^2} = |c|\sqrt{5} = 5\sqrt{5}$

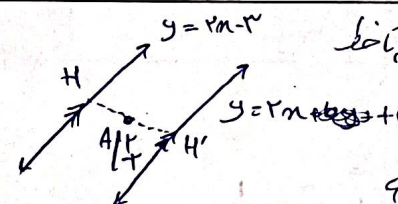
7



$AH = 2$
 (ارتفاع از مبدأ شیب 2
 عمود بر خط)

$C \left| \frac{x}{0} \Rightarrow (1-m)x = -2 \Rightarrow x = \frac{-2}{m-1} \right. \left. \begin{matrix} x-x' = \frac{2+m^2-m}{2m-1} \\ B \left| \frac{x'}{0} \Rightarrow \frac{2}{m}x = -2 \Rightarrow x = -m \end{matrix} \right. \right.$
 $2m^2 - 2m + 1 = 10m - 10 \Rightarrow (m-3)^2 = 0 \Rightarrow m = 3$

8

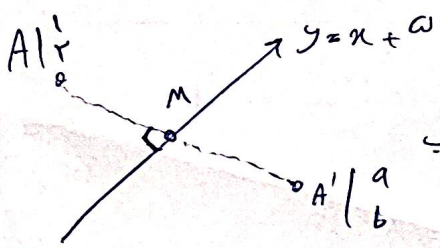


$AH = \frac{|2(2) - (-2) - 2|}{\sqrt{2+1}} = \frac{4}{\sqrt{3}} \rightarrow HH' = 2 \times \frac{4}{\sqrt{3}} = \frac{8}{\sqrt{3}}$

$\frac{4}{\sqrt{3}} = \frac{|c+c'|}{\sqrt{a^2+b^2}} \Rightarrow 4 = |1-2+c'| \Rightarrow c' = 9$

$12 \text{ بر } 2 \text{ نسبت خط } y = 2x + 9$

9



$M \left(\frac{1+a}{2}, \frac{1+b}{2} \right) \Rightarrow a + \frac{1+a}{2} = \frac{1+b}{2} \Rightarrow b = a+1$
 $AA' \perp BC \Rightarrow m_{AA'} = -1 \Rightarrow \frac{1-b}{1-a} = -1 \Rightarrow 1-a = b-1 \Rightarrow b-a = 2$
 $\Rightarrow \begin{cases} a = -3 \\ b = 9 \end{cases} \Rightarrow \begin{cases} a = -3 \\ b = 9 \end{cases} \Rightarrow \begin{cases} a = -3 \\ b = 9 \end{cases} \Rightarrow \begin{cases} a = -3 \\ b = 9 \end{cases}$

10