

۱ ابتدا نقطه وسط دو نقطه را یابیم $\rightarrow A(9, -6) B(2, 1) \Rightarrow M(\frac{9+2}{2}, \frac{1-6}{2}) \leftarrow$
 معادله خط اندا از دو نقطه $\Rightarrow M(2, 1) \quad m = \frac{\Delta y}{\Delta x} \Rightarrow \frac{1 - (-6)}{2 - 9} = -V \leftarrow$
 $\Rightarrow m \times m' = -1 \Rightarrow m' = \frac{1}{V} \Rightarrow \frac{1}{V}x + b = y \Rightarrow \frac{1}{V}(2) + b = 1 \Rightarrow b = \frac{6}{V}$
 $\Rightarrow y = \frac{1}{V}x + \frac{6}{V}$

۲ $BC \text{ طول} = \sqrt{(\Delta x)^2 + (\Delta y)^2} \Rightarrow \sqrt{(\frac{V-2}{1})^2 + (\frac{-6-1}{9})^2} = 5$
 $m_{BC} = \frac{\Delta y}{\Delta x} \Rightarrow \frac{V-2}{-6-1} = -\frac{6}{9} \Rightarrow -\frac{6}{9}x + b = y \Rightarrow -\frac{6}{9}(-1) + b = 2$
 $\Rightarrow -\frac{6}{9}x + \frac{5}{9} = y \Rightarrow \text{از خط BC} \Rightarrow \frac{|2x + 4x - 5|}{\sqrt{2^2 + 4^2}} = \frac{10}{5} = 2 \Rightarrow \Delta - 2 = 2$
 $\Rightarrow 2y + 4x - 5 = 0$

۳ ابتدا سه جابجا برابر می‌دهیم $\rightarrow y_1 = \frac{x+V}{2} \quad y_2 = \frac{5x+2}{9} \Rightarrow \frac{1}{2} = \frac{5}{9} \Rightarrow 5 = 2$
 $\Rightarrow 2y - x - V = 0$
 $9y - 2x - 2 = 0 \rightarrow 2y - x - 1 = 0 \rightarrow \text{فاصله خط} = \frac{|-1 - (-V)|}{\sqrt{2^2 + 1^2}} = \frac{4}{\sqrt{5}}$
 $\Rightarrow \text{مساحت} = \frac{r}{\sqrt{5}} \Rightarrow S = \pi R^2 \Rightarrow (\frac{r}{\sqrt{5}})^2 \pi = \frac{4}{5} \pi$

۴ $A(2, 2) B(9, 1) \Rightarrow M(\frac{2+9}{2}, \frac{2+1}{2}) \Rightarrow M(2, 2)$
 $m_{AB} = \frac{\Delta y}{\Delta x} \Rightarrow \frac{2-1}{2-9} = -\frac{1}{7} \Rightarrow -\frac{1}{7}x + b = y \Rightarrow -\frac{1}{7}(2) + b = 2 \Rightarrow -\frac{2}{7} + b = 2 \Rightarrow b = \frac{16}{7}$
 $m \times m' = -1 \Rightarrow m' = 7 \Rightarrow x + b = y \Rightarrow -1 + b = 2 \Rightarrow b = 3 \Rightarrow x - 2 = y$
 $\Rightarrow x - 2 = -x + 5 \Rightarrow x = \frac{7}{2} \quad y = \frac{3}{2} \Rightarrow MH = \sqrt{(\frac{7}{2}-2)^2 + (\frac{3}{2}-2)^2} = \frac{\sqrt{2}}{2}$

۵ $\cancel{m \times m' = -1} \Rightarrow m \times m' = -1 \Rightarrow \sigma = \frac{2m-2}{-5+m} \quad \sigma' = \frac{-m-1}{9-2m}$
 $\Rightarrow -2m^2 - m - 2 = 20 - 19m + 2m^2 \Rightarrow 4m^2 - 12m + 18 = 0 \Rightarrow \Delta < 0$
 $\frac{2-2m}{5-m} = \frac{9-2m}{m+1} \rightarrow$ برای سنجش متناظر

$$\left. \begin{aligned} y_{AB} &= \frac{-n+2}{2} \\ y_{AC} &= 2n-1 \\ y_{BC} &= -n+5 \end{aligned} \right\} \begin{aligned} &\frac{-n+2}{2} = 2n-1 \Rightarrow A(1,1) \quad M\left(\frac{5+1}{2}, \frac{2-1}{2}\right) \\ &\Rightarrow 2n-1 = -n+5 \Rightarrow C\left(\frac{5}{2}, \frac{2}{2}\right) \Rightarrow M = \left(\frac{1+5}{2}, \frac{2}{2}\right) \\ &-n+5 = \frac{-n+2}{2} \Rightarrow B(5,-1) \quad AM = \sqrt{\left(\frac{1-5}{2}\right)^2 + \left(\frac{2-1}{2}\right)^2} \\ &\Rightarrow AM = \frac{5\sqrt{2}}{2} \quad AH = \text{ارتفاع از نقطه A} \Rightarrow \frac{|1+1-5|}{\sqrt{2^2+1^2}} = \sqrt{2} \Rightarrow \frac{5\sqrt{2}}{2} = \left(\frac{5}{\sqrt{2}}\right) \end{aligned}$$

$$\begin{aligned} y &= -\frac{1}{2}x + b \Rightarrow 2y + x - 2b = 0 \Rightarrow \sqrt{2} = \frac{|2x_0 + 0 - 2b|}{\sqrt{2^2 + 1^2}} \Rightarrow \sqrt{100} = |-2b| \\ \Rightarrow |2b| &= 10 \Rightarrow b = 5 \Rightarrow -\frac{1}{2}x + 5 = y \Rightarrow \text{معادله خط} = (0, 5) \\ \Rightarrow AB &= \sqrt{(1-0)^2 + (-1-5)^2} \Rightarrow AB = 5\sqrt{5} \quad \text{طول از مبدا} = (1, 0) \end{aligned}$$

3. معادله از مبدا می باشد پس محل برخورد آن نقطه $(0, 2)$ است
 ارتفاع مثلث برابر است.
 $y = \frac{5x+2m}{m} \Rightarrow y = \frac{5}{m}x + 2$

صاف را با محور ها برخورد می دهیم
 $\Rightarrow 0 = (1-m)x + 2 \Rightarrow x = \frac{2}{m-1} \Rightarrow \frac{1}{2} \times \frac{2}{m-1} \times \left| \frac{-m}{2} - \frac{2}{m-1} \right| = \frac{5}{2} \quad 2x-1 = \frac{2}{m-1}$
 $0 = \frac{5}{m}(x) + 2 \Rightarrow x = \frac{-m}{5} \Rightarrow \frac{-m^2+m-5}{2m-2} = \frac{5}{2} \Rightarrow 2m^2+11m-2=0 \Rightarrow p=-1$
 $\frac{-m^2+m-5}{2m-2} = -\frac{5}{2} \Rightarrow m^2-5m+9=0 \Rightarrow m=2$

انکس خط منبسط به نقطه
 $(n, 2n-2) \Rightarrow y = \frac{n+n'}{2}$

$\Rightarrow 5-n = n' \Rightarrow$
 $\frac{2n-2+n'}{2} = -2 \Rightarrow y' = -2n'-1 \Rightarrow y' = -2(5-n)-1 \Rightarrow y' = 2n-9$

ابتدائیب خط عبور دندنا از نقطه A را با خطیب می بینیم
 $m \times m' = -1 \Rightarrow 1 \times m' = -1 \Rightarrow m' = -1$
 $-n+b = y = \frac{1}{2} \Rightarrow -(1)+b=2 \Rightarrow -n+2=y \Rightarrow -n+2=n+5$
 $\Rightarrow n = -1 \quad y = 5 \Rightarrow -1 = \frac{1+b}{2} \Rightarrow 0 = -2 \quad 5 = \frac{2+b}{2} \Rightarrow b = 5$
 $\Rightarrow 2 \times 5 - (-2) = 12$