

$A(4, -4) \quad B(2, 1) \rightarrow m_{AB} = \frac{1-(-4)}{2-4} = -\frac{5}{2} \rightarrow m$ مماس بر منحنی؟
 $\rightarrow m_{AB} = \frac{1}{m} = -\frac{2}{5}$ مماس ۲ بر منحنی
 $y - 1 = -\frac{2}{5}(x - 2)$
 $y = -\frac{2}{5}x + \frac{4}{5} + 1 = -\frac{2}{5}x + \frac{9}{5}$
 $y = \frac{m}{V} + \frac{K}{V}$
 $Vy = x + \frac{9}{5}V$

$BC \text{ طول} = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2} \Rightarrow BC \text{ طول} = \sqrt{(-1-4)^2 + (2-2)^2} = 5$
 $m_{BC} = \frac{y_2 - y_1}{x_2 - x_1} \Rightarrow m_{BC} = \frac{4}{-4} = -1 \Rightarrow BC \text{ موازی} \Rightarrow y - 2 = -1(x - 2) \Rightarrow y = -x + 4$
 $BC \text{ موازی} \Rightarrow y = -\frac{x}{2} + \frac{5}{2} \Rightarrow BC \text{ موازی} = 3y + 4x - 5 = 0$ فاصله نقطه از خط
 $BC \text{ موازی} = d = \frac{|am_0 + by_0 + c|}{\sqrt{a^2 + b^2}}$
 $AH \text{ طول} = \frac{|1y_0 + 4x_0 - 5|}{\sqrt{1^2 + 4^2}} = \frac{|1(-1) + 4(2) - 5|}{\sqrt{17}} = \frac{|-1 + 8 - 5|}{\sqrt{17}} = \frac{2}{\sqrt{17}}$
 $BC - AH = 5 - \frac{2}{\sqrt{17}} = \frac{5\sqrt{17} - 2}{\sqrt{17}}$

$xy - x - y = 0 \Rightarrow xy - x - y + 1 = 1 \Rightarrow (x-1)(y-1) = 1$
 $xy - x - y = 0 \Rightarrow xy - x - y + 1 = 1 \Rightarrow (x-1)(y-1) = 1$
 $d = \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \rightarrow r = \frac{1}{\sqrt{2}}$
 $S = \pi r^2 \rightarrow \pi \times \left(\frac{1}{\sqrt{2}}\right)^2 = \frac{\pi}{2}$

$m_{AB} = \frac{y_B - y_A}{x_B - x_A} \Rightarrow m_{AB} = \frac{1-(-4)}{2-4} = -\frac{5}{2} \rightarrow AB \text{ موازی} \Rightarrow y - 1 = -\frac{5}{2}(x - 2)$
 $y = -\frac{5}{2}x + 5 + 1 = -\frac{5}{2}x + 6$
 $m_{AH} \rightarrow m_{AB} = -\frac{5}{2} \rightarrow CH \text{ موازی} \Rightarrow y + 1 = -\frac{5}{2}(x - 2) \Rightarrow y = -\frac{5}{2}x + 5 - 1 = -\frac{5}{2}x + 4$
 $y = -\frac{5}{2}x + 6$
 $y = -\frac{5}{2}x + 4$
 $xy = 4 \rightarrow y = \frac{4}{x} \quad x = \frac{4}{y} \quad H \left| \begin{array}{l} \frac{4}{y} \\ \frac{4}{x} \end{array} \right. \quad m = \frac{y_A + y_B}{x} = \frac{1 + (-4)}{2} = -\frac{3}{2}$
 $y_m = \frac{y_A + y_B}{y} = \frac{-4 + 1}{-2} = \frac{3}{2}$
 $MH = \sqrt{\left(\frac{1}{y}\right)^2 + \left(\frac{1}{x}\right)^2} = \frac{1}{y} \sqrt{y^2 + 1} = \frac{\sqrt{y^2 + 1}}{y}$

$m_1 = \frac{y_m - y}{x - a}$
 $m_2 = \frac{y + 1}{x - 4}$
 $\frac{m_1 + 1}{x - 4} = \frac{-m + a}{x - 4} \Rightarrow -x^2 + 1x + 4m - 4 = x^2 - 4x + 4m - 4$
 $-x^2 + 1x + 4m - 4 = x^2 - 4x + 4m - 4$
 $5x^2 - 5x = 0 \Rightarrow x = 1$
 $\Delta < 0$

$$A: \begin{cases} m+2y=4 \\ y=2m-1 \end{cases} \quad m+2(2m-1)=4 \rightarrow m+4m-2=4 \rightarrow 5m=6 \rightarrow m=\frac{6}{5} \quad y=1 \quad A \left| \begin{smallmatrix} 1 \\ 1 \end{smallmatrix} \right. \Rightarrow AH=d=\frac{|1+1-4|}{\sqrt{5}}=\frac{2}{\sqrt{5}}=\frac{\sqrt{5}}{5}$$

$$B: \begin{cases} m+2y=2 \\ m+y=2 \end{cases} \quad y=-1 \quad m=3 \Rightarrow B \left| \begin{smallmatrix} 3 \\ -1 \end{smallmatrix} \right. \quad M \left| \begin{smallmatrix} 1 \\ 2 \\ 3 \end{smallmatrix} \right. \quad C: \begin{cases} y=2m-1 \\ m+y=2 \end{cases} \quad 2m-1+m=2 \Rightarrow m=\frac{3}{3}=1 \quad y=\frac{1}{3} \quad C \left| \begin{smallmatrix} 1 \\ \frac{1}{3} \end{smallmatrix} \right.$$

$$AM: \sqrt{\left(\frac{1}{5}\right)^2 + \left(\frac{1}{5}\right)^2} = \frac{\sqrt{2}}{5} = \frac{\omega\sqrt{2}}{5} \Rightarrow \frac{AM}{AH} = \frac{\frac{\omega\sqrt{2}}{5}}{\frac{2}{\sqrt{5}}} = \frac{\omega}{2}$$

$$y = -\frac{1}{2}x + B \Rightarrow 2y + x - 2B = 0 \rightarrow d = \frac{|1-2B|}{\sqrt{5}} = \sqrt{2} \Rightarrow \begin{matrix} -2B \geq 1 \rightarrow B \leq -\frac{1}{2} \\ 2B \geq 1 \rightarrow B \geq \frac{1}{2} \end{matrix}$$

$$B \left| \begin{smallmatrix} 0 \\ -1 \end{smallmatrix} \right. \Rightarrow y = -\frac{1}{2}x - \omega \Rightarrow A \left| \begin{smallmatrix} -1 \\ 0 \end{smallmatrix} \right. \Rightarrow AB = \sqrt{1+2\omega^2} = \omega\sqrt{2}$$

$$B \left| \begin{smallmatrix} 0 \\ \omega \end{smallmatrix} \right. \Rightarrow y = -\frac{1}{2}x + \omega \Rightarrow A \left| \begin{smallmatrix} 1 \\ 0 \end{smallmatrix} \right. \Rightarrow AB = \sqrt{1+2\omega^2} = \sqrt{1+2} = \sqrt{3} \quad \boxed{\omega\sqrt{2}}$$

$$-kx + my = 2m \rightarrow y = \frac{k}{m}x + \frac{2}{m} \Rightarrow \sum \frac{k}{m}x + \frac{2}{m} = (1-m)x + \frac{2}{m} \Rightarrow \sum \frac{k}{m}x + \frac{2}{m} = (1-m)x + \frac{2}{m} \Rightarrow \sum \frac{k}{m}x + \frac{2}{m} = (1-m)x + \frac{2}{m} \Rightarrow \sum \frac{k}{m}x + \frac{2}{m} = (1-m)x + \frac{2}{m}$$

$$(m-1)x + y = 2 \rightarrow y = -(m-1)x + 2 \Rightarrow \sum (m-1)x + 2 = \sum (m-1)x + 2 \Rightarrow \sum (m-1)x + 2 = \sum (m-1)x + 2 \Rightarrow \sum (m-1)x + 2 = \sum (m-1)x + 2$$

$$S = \frac{\text{ارتفاع} \times \text{طول}}{2} = \frac{\omega}{2} \Rightarrow \text{ارتفاع} \times \omega = 2 \times \left| \frac{\sum (m-1)x + 2}{m-1} \right| \Rightarrow \left| \frac{\sum (m-1)x + 2}{m-1} \right| = \frac{2}{\omega}$$

$$A \left| \begin{smallmatrix} 0 \\ -2 \end{smallmatrix} \right. \quad B \left| \begin{smallmatrix} 1 \\ -1 \end{smallmatrix} \right.$$

نقطه از این خط را انتخاب و نسبت به نقطه M قرینه می‌کنیم.

$$\text{نسبت } A \text{ به } M \Rightarrow \begin{cases} xA' = 2mm - xA \Rightarrow xA' = 4 - 0 = 4 \\ yA' = 2ym - yA \Rightarrow yA' = -4 + 2 = -2 \end{cases}$$

$$\begin{cases} xB' = 4 - 1 = 3 \\ yB' = -4 + 1 = -3 \end{cases} \quad B' \left| \begin{smallmatrix} 3 \\ -3 \end{smallmatrix} \right.$$

$$A' \left| \begin{smallmatrix} 4 \\ -2 \end{smallmatrix} \right. \quad \left. \begin{matrix} \text{خط} \\ \text{مماسی} \\ \text{در نقطه} \end{matrix} \right\} \Rightarrow MA'B' = \frac{2}{1} = 2$$

$$m_{AH} = -1 \rightarrow y - 2 = -1(m-1) \Rightarrow y = -m + 3$$

معادله خط مماس در نقطه A را می‌یابیم.

$$\begin{cases} y = m + \omega \\ y = -m + 3 \end{cases} \xrightarrow{+} \begin{cases} y = 2 \\ y = 2 \end{cases} \quad y = 2 \quad x = -1 \quad M \left| \begin{smallmatrix} -1 \\ 2 \end{smallmatrix} \right.$$

$$\begin{cases} xA' = 2mm - xA \rightarrow -2 - 1 = -3 \\ yA' = 2ym - yA \rightarrow 1 - 2 = -1 \end{cases} \quad A' \left| \begin{smallmatrix} -3 \\ -1 \end{smallmatrix} \right.$$

$$2b - a \rightarrow 2 \times 4 + 3 = 11 \quad \boxed{11}$$