

$$m = \frac{1+\epsilon}{r-\epsilon} = -\sqrt{\epsilon} \Rightarrow m' = \frac{1}{\sqrt{\epsilon}}$$

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

$$y-1 = \frac{1}{\sqrt{\epsilon}}(x-3) \Rightarrow y = \frac{1}{\sqrt{\epsilon}}x + \frac{\epsilon}{\sqrt{\epsilon}} \checkmark$$

$$BC = \sqrt{(\epsilon-1)^2 + (2+3)^2} = \sqrt{20} = 2\sqrt{5} \checkmark$$

$$\frac{1}{2} ((3 \times \epsilon) + (-\epsilon \times 2) + (-1 \times -6)) = \frac{1}{2} \times 10 = 5$$

$$AH = \frac{20}{5} = 4 \checkmark$$

$$BC - AH = 2\sqrt{5} - 4 \checkmark$$

$$y = \frac{1}{\sqrt{\epsilon}}x + \frac{1}{\sqrt{\epsilon}}$$

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$$d = \frac{\frac{\sqrt{\epsilon}}{2} - \frac{1}{\sqrt{\epsilon}}}{\sqrt{1 + \frac{1}{\epsilon}}} = \frac{2}{\sqrt{1+\epsilon}} = \frac{2}{\sqrt{5}} \Rightarrow \text{فاصله}$$

$$2\sqrt{5} = 2 \times \frac{2}{\sqrt{5}} \times \frac{2}{\sqrt{5}} = \frac{8}{5} \checkmark$$

$$M = \left(\frac{x+r}{r}, \frac{1+r}{r} \right) = (w, r)$$

(r)

$$m_{AB} = \frac{1-r}{x-r} = -1 \Rightarrow y-r = -x+r$$

$$y = -x + w \quad (1)$$

$$m_{CH} = 1 \Rightarrow y + r = x + 1$$

$$y = x - r \quad (2)$$

$$\begin{bmatrix} (1) \\ (2) \end{bmatrix} \Rightarrow \begin{aligned} x - r &= w - x \\ rx &= v \\ x &= \frac{v}{r}, w \end{aligned}$$

$$MH = \sqrt{(w, w-r)^2 + (1, w-r)^2} = \sqrt{\frac{1}{r}} \quad \checkmark$$

$$y = 1, w$$

- w

$$(wm-r)x + (w-m)y - r = 0 \Rightarrow y = \frac{-wm+r}{w-m} + \frac{r}{w-m}$$

$$(m+1)x - (rm-r)y + 1 = 0 \Rightarrow y = -\frac{m-1}{rm-r}x - \frac{1}{rm-r}$$

$$m \cdot m_r = -1 \Rightarrow \left(-\frac{wm-r}{w-m} \right) \left(-\frac{m-1}{rm-r} \right) = -1$$

$$\frac{(wm-r)(m-1)}{(w-m)(rm-r)} = -1 \Rightarrow (wm-r)(m+1) = -(w-m)(rm-r)$$

$$wm^2 + m-r = -rm^2 + rm-r \Rightarrow$$

$$wm^2 + rm + 1 = 0 \Rightarrow \Delta < 0$$

no real roots $\checkmark$

$$AB \Rightarrow x + y = r \quad AB, AC \Rightarrow x + r(x-1) = r \Rightarrow$$

$$AC \Rightarrow y = r(x-1)$$

$$x + r(x-1) = r \Rightarrow x = 1$$

$$y = r-1 = 1 \Rightarrow A = (1, 1)$$

$$BC \Rightarrow x + y = r$$

$$y = r-x \quad x = r-y$$

$$AB, BC \Rightarrow (r-y) + y = r \Rightarrow$$

$$r = r \Rightarrow y = -1$$

$$x = r+1 = \omega \Rightarrow B(\omega, -1)$$

$$\Rightarrow AC, BC \Rightarrow (r-x) + x = r \Rightarrow r = r \Rightarrow x = \frac{a}{r} \quad y = \frac{v}{r}$$

$$C = \left(\frac{a}{r}, \frac{v}{r} \right)$$

$$AM = \sqrt{\left(\frac{a}{r} - 1\right)^2 + \left(\frac{v}{r} - 1\right)^2} = \frac{a\sqrt{r}}{r}$$

$$AH \Rightarrow \frac{|Ax + By + C|}{\sqrt{A^2 + B^2}} \Rightarrow \frac{r}{\sqrt{r}} = \sqrt{r}$$

$$\frac{AM}{AH} = \frac{\frac{a\sqrt{r}}{r}}{\sqrt{r}} = \frac{a}{r}$$

$$\frac{a}{r}$$

$$\frac{a}{r} \checkmark$$

$$m = -\frac{1}{r}$$

$$y = -\frac{1}{r}x + c \Rightarrow y = -\frac{1}{r}x + \omega$$

$$x = 1 \Rightarrow (1, 0)$$

$$y = \omega \Rightarrow (0, \omega)$$

$$y = -\frac{1}{r}x - \omega \Rightarrow x = -1, y = -\omega$$

$$d = \frac{|C|}{\sqrt{1+m^2}} \Rightarrow \sqrt{r} = \frac{|C|}{\sqrt{\frac{1}{r^2} + 1}} = \frac{|C|}{\frac{\sqrt{1+r^2}}{r}} = \frac{r|C|}{\sqrt{1+r^2}} = \sqrt{r} \times \sqrt{a} =$$

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

$$r|C| \Rightarrow$$

$$|C| = \omega \Rightarrow$$

$$C = \omega$$

$$C = -\omega$$

$$\omega\sqrt{\omega}$$

ch

$$my - rx = r \Rightarrow y = \frac{r}{m}x + r \stackrel{y=0}{\Rightarrow} 0 = \frac{rx}{m} + r \Rightarrow$$

$$y + mx = x + r$$

$$x = \frac{-m}{r} \Rightarrow x_1 = \left(-\frac{m}{r}\right)$$

$$\Downarrow y = x(-m) + r \stackrel{y=0}{\Rightarrow} 0 = x(-m) + r \Rightarrow x = \frac{-r}{m-1}$$

$$x_2 = \left(\frac{-r}{m-1}, 0\right)$$

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

$$\Rightarrow \frac{a}{r} = \frac{-a}{r}$$

$$am - a = -m^2 + m - r \Rightarrow m^2 + (m-1) = 0$$

$$-am + a = -m^2 + m - r \Rightarrow m^2 + m + r = 0 \Rightarrow \delta = -1$$

$$(m-r)^2 = 0 \Rightarrow m = r$$

$$\delta = rx - 1 = -r$$

$$\boxed{-r} \checkmark$$

$$y = rx - r \Rightarrow x = (r, -r) \Rightarrow x = ra - x, y = rb - y - 9$$

$$x = r - x$$

$$y = -r - y \Rightarrow y = -[r - rx] = -r(x-1) \Rightarrow x = r - x$$

$$-r(r-x) - 1 = -1 + rx - 1 = rx - 9 \checkmark$$

$AC(1,2)$

$$y = x + 0 \quad A' = xA' = 2x \quad B - x_A = -2 = 10$$

$$yA' = 2y_B - y_A = 1 - 2 = -1$$

(2)

$$A' = (-2, 4)$$

$$y - 2 = 1 - x \Rightarrow y = 3 - x$$

$$\Rightarrow 3 - x = x + 0 \Rightarrow 2x = 3$$

$$x = 1.5$$

$$y = 1.5$$

$$1 \cdot 2 + 2 = 10$$

$$1 \cdot 2 - (-2) = 10$$

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