

20

14) interior circle مساحة داخلية

$P = \text{interior circle}$ $B(1, 1)$, $A(4, 1)$ ①

$$m_{AB} = \frac{-1-1}{4-1} = \frac{-2}{3} = \textcircled{v}$$

$$\text{line } AB: \left(\frac{x+1}{3}, \frac{y-1}{3} \right) = (1, 1)$$

$$\frac{x+1}{3} + \frac{y-1}{3} = 1$$

$$b = 1 - \frac{1}{3} = \frac{2}{3}$$

$$y = \frac{1}{3}x + \frac{2}{3} \rightarrow \boxed{3y = x + 2}$$

$$BC = \sqrt{(-1-(-1))^2 + (1-1)^2} = \sqrt{(-1)^2 + 1^2} = \sqrt{2} = \textcircled{w}$$

$$m_{BC} = \frac{1-1}{-1-(-1)} = \frac{0}{0}$$

$$\frac{-1}{3}(-1) + b = 1$$

$$b = 1 - \frac{1}{3} = \frac{2}{3}$$

$$\frac{-1}{3}x + \frac{2}{3} = y$$

$$-x + 2 = 3y \rightarrow -x - 3y = -2$$

$$BC - AH = w - r = \textcircled{w}$$

$$AH = \frac{|1 - 1(1) - 1(1) + 2|}{\sqrt{1^2 + 1^2}} = \frac{1}{\sqrt{2}} = \textcircled{r}$$

$$r_y = ax + r$$

$$(r_y - a - r = 0) \times r \rightarrow r_y - r - r = 0$$

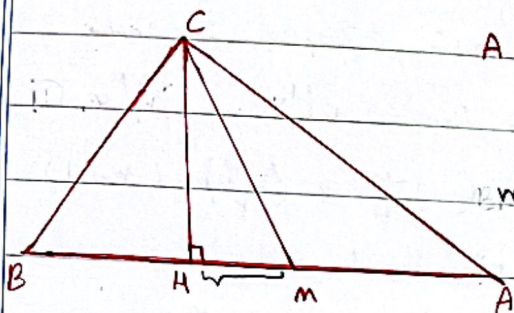
$$\frac{a}{r} = \frac{1}{r} \rightarrow \boxed{a = 1}$$

$$\rightarrow r_y - r - r = 0$$

$$\frac{|C - C'|}{\sqrt{a^2 + b^2}} = \frac{|1 - 1|}{\sqrt{1^2 + 1^2}} = \frac{0}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{0}{2} = 0$$

$$S = \pi r^2 = \frac{9}{2} \pi$$

Scanned with



$$A(r, r) \quad B(k, 1) \quad C(-1, -r) \quad (k)$$

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

$$m_{AB} = \frac{-r}{r} = -1$$

$$m_{CH} = 1$$

$$y_{AB} = -x + b \quad \xrightarrow{r, r} \quad -r + b = r$$

$$y_{CH} = x + b \quad \xrightarrow{(-1, -r)} \quad -1 + b = -r \rightarrow y_{CH} = x - r \quad y = -x + 2$$

$$-x + 2 = x - r \rightarrow r = 2x - r \rightarrow x = \frac{r}{2} \quad y = \frac{r}{2}$$

$$H = \left(\frac{r}{2}, \frac{r}{2} \right) \rightarrow MH = \sqrt{\left(\frac{-1}{2} \right)^2 + \left(\frac{1}{2} \right)^2} = \frac{\sqrt{2}}{2}$$

$$(rm - r)x + (2 - m)y - r = 0 \quad \xrightarrow{-rm + r} \quad \leftarrow m$$

$$(m+1)x - (rm - r)y + 1 = 0 \quad \xrightarrow{+m+1} \quad \leftarrow m$$

$$(-m-1)(-rm+r) = (rm-r)(2-m)$$

$$rm^2 - rm + rm^2 - r = 2rm - rm^2 - 2 + rm$$

$$2rm^2 - 13m + 11 = 0$$

$\Delta < 0$ این دو خط به هم نمی‌رسند زیرا

$$\begin{cases} AC: y = kx - 1 \\ BC: y = k - x \end{cases} \quad C = \left(\frac{2}{k}, \frac{1}{k} \right) \quad (y)$$

$$kx - 1 = k - x \rightarrow \boxed{x = \frac{2}{k}} \quad \boxed{y = k - \frac{2}{k} = \frac{1}{k}}$$

$$\begin{cases} AB: y = \frac{r-x}{r} \\ BC: y = k - x \end{cases} \rightarrow \frac{r-x}{r} = k - x \rightarrow \boxed{x = \frac{r}{k-1}} \quad \boxed{y = -1}$$

Scanned with

$$\begin{cases} AB: y = \frac{r-x}{r} \rightarrow \frac{r-x}{r} = \frac{r-1}{r} \rightarrow r-x = r-1 \rightarrow x=1 \\ AC: y = rx-1 \end{cases} \quad A: (1, 1) \quad \omega = \omega x \rightarrow \boxed{x=1}$$

$$M_{AB}: \rightarrow \left(\frac{1}{r}, \frac{r}{r} \right)$$

$$AM = \frac{\sqrt{\omega_0}}{r} \quad AH = \sqrt{r}$$

$$\frac{AM}{AH} = \frac{\omega}{r}$$

$$y = -\frac{1}{r}x + b$$

$$d = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}}$$

$$\frac{|(\frac{1}{r}x_0) + 1(0) - b|}{\sqrt{1 + \frac{1}{r^2}}} = \sqrt{r} \quad , \quad \frac{r|b|}{\sqrt{a}} = r\sqrt{a}$$

$$\boxed{|b| = a}$$

$$(0, y_A) \quad (x_B, 0)$$

$$\downarrow y_A = b \quad \rightarrow -\frac{1}{r}x_B = -b \rightarrow x_B = +rb$$

$$AB = \sqrt{a^2 + b^2} = \sqrt{1 + r^2 a^2} = a\sqrt{1 + r^2}$$

$$\begin{cases} my - rx = rm \rightarrow y = \frac{r}{m}x + r \end{cases} \quad \text{intercept} \quad \text{①}$$

$$y + mx = x + r \rightarrow y = (1-m)x + r \quad \text{②}$$

$$\begin{cases} y=0 \\ y = (1-m)x + r \end{cases} \rightarrow x = \frac{r}{m-1} \quad , \quad y=0 \rightarrow B\left(\frac{r}{m-1}, 0\right)$$

Scanned with

$$\begin{cases} y=0 \\ y = \frac{k}{m}x + p \end{cases} \rightarrow x_B = \frac{-m}{k}, 0 = y \rightarrow C\left(\frac{-m}{k}, 0\right)$$

$$S = \frac{\frac{p}{\sqrt{1+\frac{k^2}{m^2}}}}{\frac{k}{\sqrt{1+\frac{k^2}{m^2}}}} = \frac{p}{k} \rightarrow \text{area} = \frac{p}{k} = BC = \sqrt{\left(\frac{k}{m-1} + \frac{m}{k}\right)^2}$$

$$\frac{m^2 - m + k}{k(m-1)} = \frac{p}{k} \Rightarrow m^2 - m + k = pm - p$$

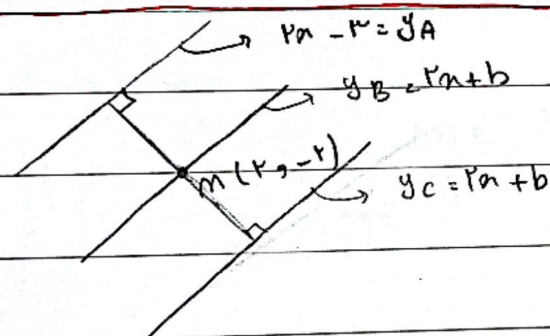
$$m^2 - 4m + 9 = 0 \rightarrow (m-2)^2 = 5$$

$$m^2 - m + k = -2m + p$$

$$\boxed{m=3}$$

$$m^2 + km - 1 = 0 \rightarrow \text{yield } m = -1$$

$$-1 \times 3 = \boxed{-3}$$



$$y = kx - 3$$

$$m(k, -1)$$

(9)

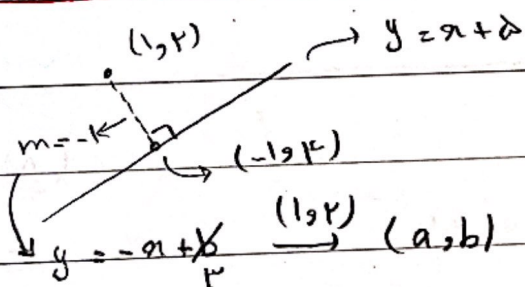
$$k + b = -1 \rightarrow \boxed{b = -4}$$

(5)

$$y_B = kx - 4$$

$$\frac{b-3}{k} = -4 \rightarrow b = -4$$

$$\boxed{y = kx - 4}$$



$$\begin{cases} y = x + a \\ y = -x + p \end{cases} \rightarrow x + a = -x + p$$

(10)

$$a = -1$$

(5)

$$y = k$$

$$\frac{a+1}{k} = -1 \rightarrow \boxed{a = -2}$$

$$\frac{b+3}{k} = 1 \rightarrow \boxed{b = 4}$$

$$kb - a = 1k - (-2) = \boxed{12}$$

Scibó