

$$B(5, m), A(-3, 4)$$

$$m = -\frac{1}{7}$$

$$AB = \sqrt{(4-m)^2 + (-7-4)^2} = \sqrt{9 + 49} = \sqrt{58}$$

$$y = -\frac{1}{7}x + b$$

$$m = \frac{4-m}{-7-4} = -\frac{1}{7} \rightarrow 4-m = 7$$

$$S_{AB} = \sqrt{58} \times \sqrt{58} = 58$$

$$A(-1, 4), B(3, 1), C(m, y), D(-1+m, y+3)$$

$$AB \parallel CD \rightarrow \frac{4-1}{-1-3} = \frac{y-1}{m+1} \rightarrow m+1 = 7 \rightarrow m = 6$$

$$AB \parallel CD \rightarrow \frac{4-1}{-1-3} = \frac{y-1}{m+1} \rightarrow m+1 = 7 \rightarrow m = 6 \rightarrow C(7, 1)$$

$$AB \perp BC \rightarrow -\frac{3}{4} \times \frac{y-1}{m-4} = -1 \rightarrow \frac{y-1}{m-4} = \frac{4}{3} \rightarrow y = \frac{4}{3}(m-4) + 1$$

$$(AB+BC) \left(\frac{4}{3} + \frac{1}{3} \right) = 10$$

$$m = 6, y = 1$$

$$\rightarrow (1, 0) \rightarrow (6, 1)$$

$$m^2 + (m^2 - 1)y = 3$$

$$\tan \alpha = \sqrt{3}$$

مقدار زاویه

$$\frac{-2m}{m^2 - 1} = \sqrt{3} \rightarrow -2m = \sqrt{3}m^2 - \sqrt{3} \rightarrow \sqrt{3}m^2 + 2m - \sqrt{3} = 0$$

$$\Delta = 3 - 4(-\sqrt{3})(\sqrt{3}) = 3 + 12 = 15$$

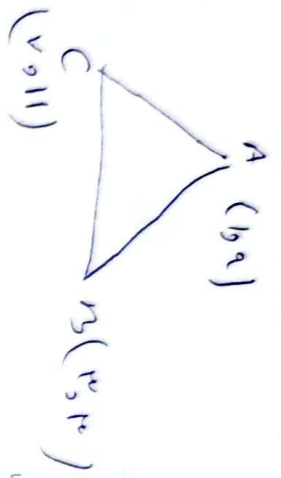
$$\alpha = \frac{\sqrt{\Delta}}{|a|}$$

$$\frac{\sqrt{15}}{\sqrt{3}} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$$

(x)

(y)

$A(1, 2) \quad B(4, 3) \quad C(2, 1)$
 $m_{BC} = \frac{3-1}{2-4} = \frac{-2}{-2} = 1$



$y = x + b$
 $2 = 4 + b \rightarrow b = -2$

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

$x + \frac{1}{1}x = \frac{1 \cdot 2}{1} \rightarrow \frac{2x}{1} = 2 \Rightarrow x = 1$
 $y = x - 2 = 1 - 2 = -1$

$(2, 1) \rightarrow (1, 2) \rightarrow \sqrt{(2-1)^2 + (1-2)^2} = \sqrt{1+1} = \sqrt{2}$

(a)

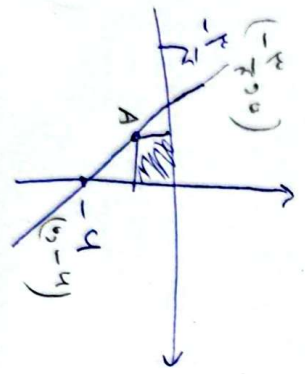
(y)

$AB: y + x = 5 \quad AC: x - y = 1$
 $BC: x - y = -1$

$B \begin{cases} AB: y + x = 5 \\ BC: x - y = -1 \end{cases} \rightarrow \begin{cases} x = 1 \\ y = 1 \end{cases} \rightarrow B(1, 1)$

$AB = AC = \sqrt{\left(\frac{1-2}{1-1}\right)^2 + \left(\frac{1-2}{1-1}\right)^2} = \sqrt{0+0} = 0$

$m = \frac{0+1}{-\frac{1}{2}-0} = \frac{1}{-\frac{1}{2}} = -2$



$y = -x + b$
 $2 = -1 + b \rightarrow b = 3$
 $y = -x + 3$

(y)

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

$y - 2 = -\frac{1}{2}(x - 1)$
 $2y - 4 = -x + 1$
 $x + 2y = 5$

$y = x + 1$
 $y = \frac{m}{a} + a - 1$
 $a = \frac{1}{2} \rightarrow a^2 = \frac{1}{4}$
 $a = \pm \frac{1}{2}$

$$y = ax + 1 \xrightarrow{(5,1)} \text{intercept}$$

← intercept

note (1,1) is the center of the circle

$$y = ax$$

$$\left| \frac{1-a}{\sqrt{1+a^2}} \right| = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

(5)



$$10 - \frac{1}{2} = \frac{\sqrt{2}}{2}$$

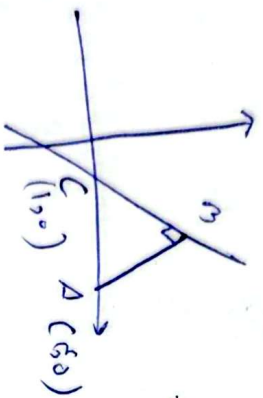
$$S = \frac{\sqrt{10}}{2} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{2} = \sqrt{10}$$

$$xy = m-1 \rightarrow y = \frac{m-1}{x} \quad (5,0)$$

(c)

distance $d = \left| \frac{f \cdot -1}{\sqrt{10}} \right| = \frac{f}{\sqrt{10}}$

$C = (1,0) \rightarrow a = (1,0)$ (5)



$$m_{AC} = -1 \quad (5,0) \rightarrow y = -1x + 1 \rightarrow -1x + 1 = \frac{m-1}{x}$$

$$BC = \sqrt{\left(\frac{x}{1}\right)^2 + \left(\frac{1}{1}\right)^2} = \frac{\sqrt{10}}{2} \rightarrow S = \frac{9\sqrt{10}}{2} \times \frac{\sqrt{10}}{2} \times \frac{1}{2} = \sqrt{10}$$

$$\left(-\frac{1}{x}, 0 \right) \text{ and } \left(-\frac{1}{x}, 5a \right)$$

$$a-b = -\frac{\sqrt{10}}{x} \quad \left(-\frac{1}{x} + \frac{1}{x} \right)^2$$

$$y = \sqrt{10}m + C$$

$$m = \sqrt{10} \Rightarrow \frac{a-b}{-\frac{1}{x} + \frac{1}{x}} = \sqrt{10}$$

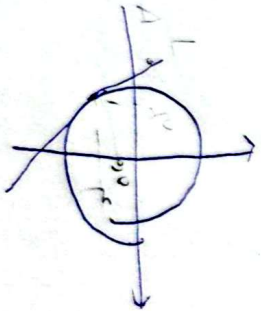
(a)

distance = $\sqrt{\left(a-b\right)^2 + \left(-\frac{1}{x} + \frac{1}{x}\right)^2} = \sqrt{\frac{10}{x^2} + \frac{1}{x^2}} = \frac{\sqrt{10}}{x} = \frac{1}{x}$ (5)

$$\frac{1}{x} = \frac{1}{x} \Rightarrow a = \frac{1}{x}$$

(10)

$$(-x, -x)$$



$$A \rightarrow m = -1 \Rightarrow -x - 1 = -1$$

$$(-x, -1)$$

$$\rightarrow -x - 1 = -1$$

(5)

