۱۷,۲۵

کار صحرایی

۳

(۱)

$-\frac{۱}{۲} = \frac{m-k}{۴+۲} \longrightarrow m-k=-۳$

$\overline{AB} = \sqrt{(۴+۲)^۲ + (m-k)^۲} \longrightarrow \overline{AB} = \sqrt{۳۶+۹} = \sqrt{۴۵}$

$m-k=-۳$

$S = \overline{AB} \times \overline{AB} = ۴۵$

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(۲)

۳

$\overline{AB} = \sqrt{(۱+۳)^۲ + (۴-۱)^۲} = ۵$

$m\overline{AB} = \frac{۴-۱}{-۱-۳} = -\frac{۳}{۴} \longrightarrow m_{BC} = \frac{۴}{۳}$ ✓

$m\overline{BC} = \frac{۴}{۳} = \frac{y-۴}{x-۴} \longrightarrow \frac{۴}{۳} = \frac{y-۴}{-\frac{۳}{۴}+\frac{۱}{۴}} \longrightarrow y=۱$

$\overline{CD} = ۵ = \sqrt{(۱+۲x)^۲ + ۳^۲} \longrightarrow ۴ = (۱+۲x) \longrightarrow x = \frac{۳}{۲}$ ✓

$\longrightarrow x = \frac{۳}{۲}\ ,\ y=۱ \longrightarrow C(\frac{۳}{۲}, ۱)$

$\overline{BC} = \sqrt{(۳-\frac{۳}{۲})^۲ + (۳-۱)^۲} = \frac{۵}{۲}$

محیط $P = \frac{۵}{۲} + \frac{۵}{۲} + ۵ + ۵ = ۱۵ \longrightarrow \boxed{P=۱۵}$

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(۳)

$y = -\frac{۲m}{m^۲-۱} + \frac{۳}{m^۲-۱} \longrightarrow m = tg۶۰° \Rightarrow \sqrt{۳} = \frac{-۲m}{m^۲+۱}$

$\sqrt{۳}m^۲ + ۲m - \sqrt{۳} = ۰ \longrightarrow m = \frac{-۲ \pm ۴}{۲\sqrt{۳}}$

$m_۱ = -\frac{۳}{\sqrt{۳}} = \frac{-۳\sqrt{۳}}{۳}$ $m_۲ - m_۱ =$

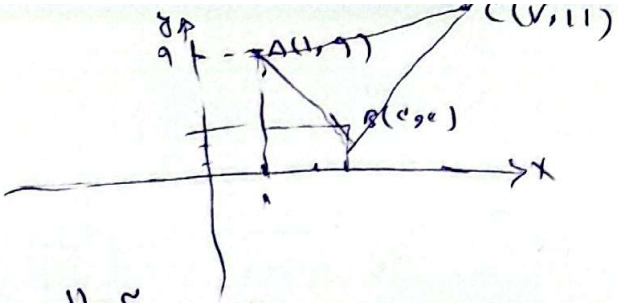
$m_۲ = \frac{۲}{۲\sqrt{۳}} = \frac{\sqrt{۳}}{۳}$

$m_۲ - m_۱ = \frac{\sqrt{۳}}{۳} + ۳\sqrt{۳} = ۱۰\sqrt{۳}$

$\frac{۴\sqrt{۳}}{۳}$

۱,۷۵

(٤)



(٢)

$m_{BC} = \frac{11-5}{7-3} = \frac{6}{4} = 2 \rightarrow y = 2x + H$ $\quad (3,5)$

$5 = 6 + H \rightarrow H = -1$

$\bar{BC}: y = 2x - 1 \rightarrow y - 2x + 1 = 0$

$\bar{AH} = \frac{|6 - 2 + 1|}{\sqrt{1+4}} = \frac{10}{\sqrt{5}} = 2\sqrt{5} \rightarrow AH = 2\sqrt{5}$

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(٥)

$AB: y + 2x = 7$
$BC: 2y - 7x = -19$

$\rightarrow \begin{cases} -2y - 4x = -14 \\ 2y - 7x = -19 \end{cases} \rightarrow x = 3,\ y = 1 \rightarrow A(3,1)$

(٢)

$BH = \frac{|14 - 2 \times 3 - 1 \times 1|}{\sqrt{17+9}} = \frac{11}{5} = 2,2$

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(٦)

$m = \frac{-6-0}{0+\frac{3}{2}} = -4 \rightarrow y = -4x + 4$

A نقطة (x,x)

$x = -4x + 4 \rightarrow 5x = 4$

$x = \frac{4}{5}$

$A\left(\frac{4}{5}, \frac{4}{5}\right)$

(٢)

$\bar{AO} = \sqrt{\left(\frac{4}{5}\right)^2 + \left(\frac{4}{5}\right)^2} = \sqrt{2} \times \frac{4}{5} = \frac{4}{5}\sqrt{2}$

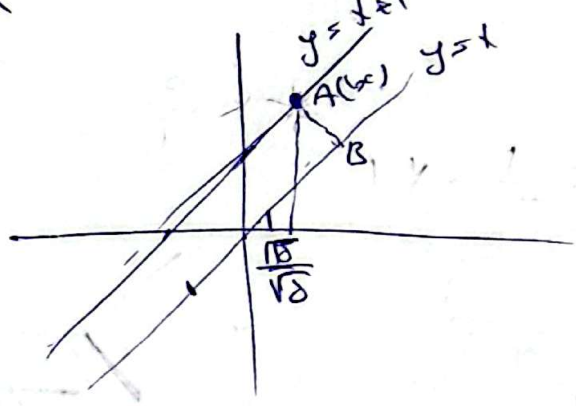
$y = ax + 1$
$y = \frac{x}{a} + \frac{a-1}{a}$ $\rightarrow m = m' \rightarrow a = \frac{1}{a} \rightarrow a \neq \pm 1$

$\begin{cases} y = x + 1 \\ y = x \end{cases} \rightarrow \frac{c - c'}{\sqrt{2}} = \frac{1}{\sqrt{2}} \rightarrow \frac{\sqrt{2}}{2}$

$y = ax + 1$

$y = \frac{x}{a} + \frac{a-1}{a}$ $\rightarrow m = m' \rightarrow a = \frac{1}{a} \rightarrow \boxed{a = 1}$

خطوط موازی $\begin{cases} y = x + 1 \\ y = x \end{cases}$



(۷)

۱,۵

$AC = 5 = \sqrt{x^2 + x^2} \rightarrow 5 = \sqrt{2}x \rightarrow \left(x = \frac{5}{\sqrt{2}}\right)$

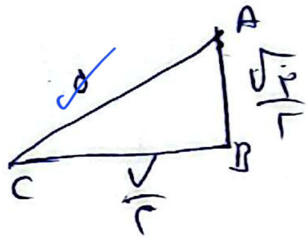
نقطه c روی $y = x$

$AB = \frac{|c - c + 1|}{\sqrt{2}} = \frac{1}{\sqrt{2}} = \left(\frac{\sqrt{2}}{2}\right)$, $AB = \frac{\sqrt{2}}{2}$

$AC = 5$

$BC = \sqrt{25 - \frac{1}{2}} = \frac{7}{2}$

$S = \frac{7}{\sqrt{2}} \times \frac{\sqrt{2}}{2} = \frac{7\sqrt{2}}{4} = \frac{7}{2}$



$25 = \frac{1}{2} + CB^2$

$\frac{49}{2} = CB^2$

$CB = \frac{7}{\sqrt{2}}$

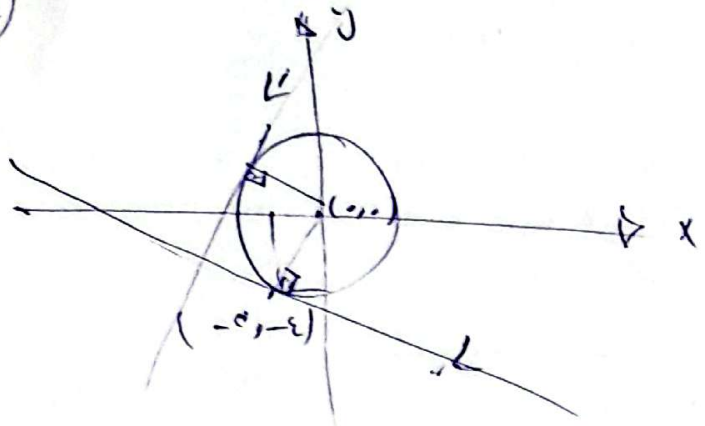
۸) ۰/۵

$AH = \frac{|4 - 3(0) - 1|}{\sqrt{10}} = \frac{3}{\sqrt{10}}$

$AB^2 = AH^2 + BH^2 \rightarrow 3^2 = \left[\frac{3}{\sqrt{10}}\right]^2 + BH^2 \rightarrow BH = \frac{9}{\sqrt{10}}$

$S = \frac{3}{\sqrt{10}} \times \frac{9}{\sqrt{10}} \times \frac{1}{2} = \frac{27}{20}$

(1)



$m_{L'} = \frac{3}{4}$, $m_L = -\frac{4}{3}$

L: $y = -\frac{4}{3}x + H$, $(-3,-4)$ $\rightarrow$ $H = -4 - \frac{12}{3} = -\frac{100}{25}$

L $\boxed{y = -\frac{4}{3}x - \frac{100}{25}}$

L' $y = \frac{3}{4}x + H$, $R = 1$ $\rightarrow$ $1 = \frac{|H|}{\sqrt{1+\frac{9}{16}}} = \frac{H}{\frac{5}{4}}$

$H = \frac{5}{4}$

L' $\boxed{y = \frac{3}{4}x + \frac{5}{4}}$

$$\begin{cases} y = \frac{3}{4}x + \frac{5}{4} \\ y = -\frac{4}{3}x - \frac{25}{12} \end{cases} \rightarrow \frac{25}{12}x = -\frac{75}{12} \rightarrow \begin{cases} x = -3 \\ y = -1 \end{cases}$$

$\rightarrow \boxed{xy = 3}$

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(9)

$$\sqrt{2} = \frac{b-a}{-\frac{1}{3}+\frac{1}{3}} = \frac{b-a}{\frac{2}{3}} \rightarrow b-a = \frac{\sqrt{2}}{3}$$

$$\overline{AB} = \sqrt{(b-a)^2 + (\tfrac{1}{3}-\tfrac{1}{3})^2} = \sqrt{\frac{2}{9} + \frac{1}{9}} = \frac{1}{3}$$

$$AC = \sqrt{2}\,\overline{AB} = \frac{\sqrt{2}}{3}$$