(۱)

$A(-2,k)$ $B(4,m)$

$\frac{m-k}{4-(-2)} = \frac{m-k}{6} = \frac{-1}{2} \rightarrow m-k=-3$ ← اندازه ضلع = فاصله دو نقطه

(۲)

$\sqrt{(4-(-2))^2+(m-k)^2} = \sqrt{36+9} = \sqrt{45}$ $\boxed{S=45}$

(۳)

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

$(-1,4)$ A — $b=5$ — B $(3,1)$

a

D — C

$m_{AB} = \frac{4-1}{-1-3} = \frac{3}{-4} \rightarrow m_{BC} = \frac{4}{3}$

$x_A + x_C = x_B + x_D$

(۲)

$-1+a = 3-1-a$

$2a=3 \rightarrow a=\frac{3}{2}$

$b = \sqrt{(3-(-1))^2+(1-4)^2} = 5$

$a = \sqrt{(\frac{3}{2}-3)^2+(-1-1)^2} = \frac{5}{2}$

$\frac{4}{3}(3)+h=1$

$\frac{4}{3}(\frac{3}{2})-3=-1$ $h=-3$

$(\frac{3}{2}, -1)$

$P = 2(5+\frac{5}{2}) = 15$

(۴)

$\theta = 90^\circ$ $2mx+(m^2-1)y=3$

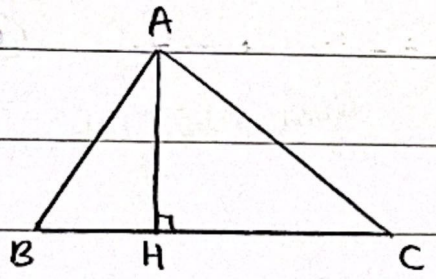
$\tan\theta = \sqrt{3} \rightarrow a=\sqrt{3} \rightarrow \frac{2a}{1-m^2} = \sqrt{3}$

(۲)

$\sqrt{3}-\sqrt{3}m^2 = 2m$

$\sqrt{3}m^2+2m-\sqrt{3}=0 \rightarrow |\alpha-\beta| = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{4-4\sqrt{3}(-\sqrt{3})}}{\sqrt{3}} = \frac{4}{\sqrt{3}}$

C(۷,۱۱) B(۳,۲) A(۱,۹) (ک)



$$\overline{AH} = \frac{|y-۲x+۲|}{\sqrt{۱۲+۲^۲}} = \frac{۱۰}{\sqrt{۵}} \times \frac{\sqrt{۵}}{\sqrt{۵}} = ۲\sqrt{۵}$$

(۳)

$$m_{BC} = \frac{۱۱-۲}{۷-۳} = \frac{۸}{۴} = ۲ \quad (ب)$$

AH → A عمود BC عمود

$۲(۳)+h=۲ \rightarrow h=-۲ \rightarrow y=۲x-۲$

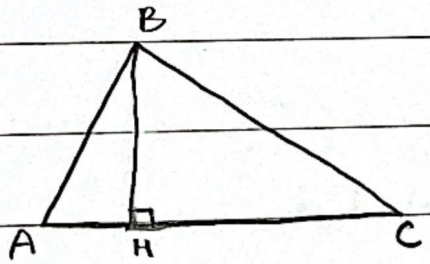
(ی)

$AB = y+۲x=۷ \rightarrow y=-۲x+۷$

$AC = ۲y-۳x=۱۷$

$BC = ۲y-۷x=-۱۹ \rightarrow y=\frac{۷}{۲}x-\frac{۱۹}{۲}$

(۲)



$$۲x+۷=\frac{۷}{۲}x-\frac{۱۹}{۲}$$

$$۷+\frac{۱۹}{۲}=\frac{۷}{۲}x+۲x$$

$$\frac{۳۳}{۲}=\frac{۱۱}{۲}x \rightarrow x=۳ \quad B(۳,۱)$$

$$BH = \frac{|۲y-۳x-۱۷|}{۵} = \frac{۲۲}{۵}$$

---

(۴)

$(۰,-۴) \quad (\frac{-۳}{۴},۰)$

$$m = \frac{۰-(-۴)}{-\frac{۳}{۴}} = \frac{۴}{\frac{-۳}{۴}} = \frac{-۱۶}{۳} = -۸$$

(۲)

$y=-۸x-۴ \rightarrow a=-۸x-۴$

$۹a=-۴ \rightarrow a=\frac{-۴}{۹}=\frac{-۲}{۳}$

$$\text{ارتفاع} = \frac{۲\sqrt{۲}}{۳}$$

⑦ مقابل هم هستند ← بین شیب‌ها برابرند

$y - ax = 1$ $\quad$ $ay - x = a - 1$

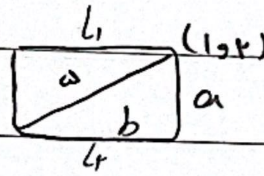
قطر $= 5$ $\quad$ $(1,2)$ $\quad$ $S = ?$ $\quad$ $a = \frac{1}{a} \to a = \pm 1$

L_1

$a = 1 \to y = x + 1$ $\quad$ $y = x$ ✓ $\to (1,2)$ راس صدق می‌کند

$a = -1 \to y = -x + 1$ $\quad$ $y = -x - 2$ ⊗

③



$a = \frac{|1-2|}{\sqrt{2}} = \frac{1}{\sqrt{2}}$

$b = \frac{3}{\sqrt{2}} \longrightarrow S = \frac{1}{\sqrt{2}} \times \frac{7}{\sqrt{2}} = \frac{7}{2} = 3/5$

$(\frac{1}{\sqrt{2}})^2 + b^2 = 5 \longrightarrow b = \frac{7}{\sqrt{2}}$

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⑧ $A(4,0)$

$x - 3y = 1$

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

②

$-3(4) + h = 0 \longrightarrow h = 12$

طول از مبدا $\to \frac{x}{3} - \frac{1}{3} \to x = 1$ $\quad$ $-3x + 12 = \frac{x}{3} - \frac{1}{3}$

$-9x + 36 = x - 1 \longrightarrow 37 = 10x \longrightarrow x = 3/7$

$\frac{37}{30} - \frac{10}{30} = \frac{27}{30} = 0/9$

ارتفاع $= \frac{|14 - 11|}{\sqrt{10}} = \frac{3}{\sqrt{10}}$

قاعده $= \sqrt{(2/7)^2 + (0/9)^2} = \frac{9\sqrt{10}}{10}$ $\quad$ $\frac{1}{2} \times \frac{3}{\sqrt{10}} \times \frac{9\sqrt{10}}{10} = 1/35$

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⑨ $(-\frac{1}{3}, b)$ $\quad$ $(-\frac{1}{2}, a)$

$m = \sqrt{3} \longrightarrow \frac{a - b}{-\frac{1}{2} + \frac{1}{3}} = \sqrt{3}$ $\quad$ $a - b = -\frac{\sqrt{3}}{6}$

②

ضلع مربع $= \sqrt{(a-b)^2 + (-\frac{1}{2} + \frac{1}{3})^2} = \frac{2}{6}$ $\quad$ قطر $= \frac{\sqrt{2}}{3}$

(۱۵)

$m_{OA} = \frac{۴}{۳} \rightarrow m_L = \frac{-۳}{۴}$ $\quad m_{L'} = \frac{۴}{۳} \rightarrow OA \parallel L'$ (۲)

$y_L = \frac{-۳}{۴}x - \frac{۲a}{۴}$

$y_{OA} = \frac{۴}{۳}x \quad y_{L'} = \frac{۴}{۳}x + c$

L' از OA فاصله $= \frac{c}{\sqrt{۱۲+\frac{۱۶}{۹}}} = a$

$c = \frac{۲a}{۳}$

$\left(\frac{-۳}{۴}x - \frac{۲a}{۴} = \frac{۴}{۳}x + \frac{۲a}{۳}\right) \times ۱۲$

$۲۵x = -۱۷a \rightarrow x = -۷$

$y = \frac{-۲۸}{۳} + \frac{۲a}{۳} = -۱$

$a_y = ۱$?