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$A \left| \begin{smallmatrix} 1 \\ -4 \end{smallmatrix} \right|, B \left| \begin{smallmatrix} 1 \\ 1 \end{smallmatrix} \right|$: $y = \frac{1}{v}u + \frac{e}{v}$ ✓

$\rightarrow y = \frac{1}{v}u + b, \frac{u}{y} \Rightarrow 1 = \frac{v}{1} + b \rightarrow b = \frac{e}{v}$

B و A نقطه‌ها $\rightarrow m: \left| \begin{smallmatrix} \frac{e}{v} \\ 1 \\ \frac{1}{v} \end{smallmatrix} \right| \rightarrow m \left| \begin{smallmatrix} 1 \\ 1 \end{smallmatrix} \right|$

AB : $\frac{1}{AB} = \frac{1}{\frac{1}{v} - (-4)} = \frac{1}{v+4} \rightarrow AB = \frac{v+4}{1} = v+4$

$A \left| \begin{smallmatrix} 1 \\ 1 \end{smallmatrix} \right|, B \left| \begin{smallmatrix} 1 \\ -4 \end{smallmatrix} \right|, C \left| \begin{smallmatrix} 1 \\ 1 \end{smallmatrix} \right|$

$BC = \sqrt{(v-1)^2 + (-1-1)^2} = \omega$ ✓

$AH = \frac{\left| 1 + \frac{e}{v}(1) - \frac{\omega}{v} \right|}{\sqrt{1 + \frac{11}{9}}} = \frac{\omega}{v}$ ✓

$BC: y = au + b$

$a = \frac{v-1}{-1-1} = \frac{e}{v}$

$y = \frac{e}{v}u + b, \frac{u}{y} \Rightarrow 1 = \frac{v}{e} + b \rightarrow b = \frac{\omega}{v} \rightarrow BC: y = \frac{e}{v}u + \frac{\omega}{v}$

BC و AH موازی؟

$\omega - 1 = 3$ ✓

فاصله خط = قطر دایره $\rightarrow$ رادیوس معادل مساحت

$ky - u = v$

$m_1 = m_2$

$ey = au + r$

$\frac{1}{v} = \frac{a}{e} \rightarrow a = r$ ✓

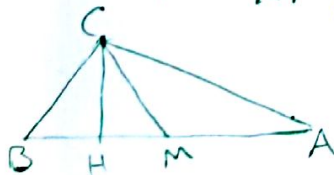
$ey - ru = r \rightarrow ry - u = 1$

$\text{فاصله خط} = \frac{|v-1|}{\sqrt{r^2+1}} = \frac{4\sqrt{5}}{\omega}$

$\rightarrow R = \frac{4\sqrt{5}}{\omega}, R^2 = \frac{9}{\omega}$

مساحت دایره: $\pi R^2 = \frac{9}{\omega} \pi$ ✓

$A \left| \begin{smallmatrix} 1 \\ 1 \end{smallmatrix} \right|, B \left| \begin{smallmatrix} 1 \\ -4 \end{smallmatrix} \right|, C \left| \begin{smallmatrix} 1 \\ 1 \end{smallmatrix} \right|$: $M: B, A$: $M \left| \begin{smallmatrix} \frac{e+r}{v} \\ \frac{1+r}{v} \end{smallmatrix} \right| \rightarrow m \left| \begin{smallmatrix} 1 \\ 1 \end{smallmatrix} \right|$ $H \left| \begin{smallmatrix} \frac{v}{r} \\ \frac{r}{r} \end{smallmatrix} \right|$



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

$AB: y = au + b \rightarrow y = u + b, \frac{u}{y} \Rightarrow 1 = \frac{r}{b} + b \rightarrow b = \frac{\omega}{v}$

$CH: y = a'u + b' \rightarrow y = u + b', \frac{u}{y} \Rightarrow 1 = \frac{r}{b'} + b' \rightarrow b' = \frac{\omega}{v}$

$a' = \frac{1}{a} = 1$

$r = r + b \rightarrow y = -u + \omega$

$r = r + b' \rightarrow y = u - r$

$H \rightarrow$ برقرار است $\rightarrow -u + \omega = u - r \rightarrow u = \frac{\omega+r}{2}, y = \frac{r}{2}$

دوطرفه هم عمود است $a_1 = \frac{1}{a_2}$

$(m+1)u - (rm-e)y + 1 = 0, a_1 = \frac{m+1}{rm-e}$

$(rm-r)u + (\omega-m)y - v = 0, a_2 = \frac{rm-r}{m-\omega}$

$\rightarrow \frac{m+1}{rm-e} = \frac{\omega-m}{rm-r}$

$rm^2 + m - r = -rm^2 + \omega m - r$

$\omega m^2 - 11m + 11 = 0 \rightarrow \Delta < 0$

$m?$ $\rightarrow$ صحیح است ✓

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$AB: x+y \geq 2, y \leq x+1$
 $AC: y = x-1$
 $BC: x+y \geq 4$

$A: AB, AC \rightarrow x-y = x-1 \rightarrow |y| = 1$
 $B: AB, BC \rightarrow x-y \geq x-1 \rightarrow |y| \geq 1$
 $C: AC, BC \rightarrow x-1 \geq x-1 \rightarrow |y| \geq 1$

$M: CB \rightarrow M \left| \begin{matrix} x+y \\ x-y \end{matrix} \right| \begin{matrix} 2 \\ 1 \end{matrix}$
 $\rightarrow M \left| \begin{matrix} 1 \\ 1 \end{matrix} \right| \begin{matrix} 2 \\ 1 \end{matrix}$

$\frac{AM}{AH} = ? \quad \frac{M \in A}{BC \in A} = \frac{\sqrt{(\frac{1}{2}-1)^2 + (\frac{1}{2}-1)^2}}{\frac{1}{\sqrt{2}}} = \frac{\frac{\sqrt{2}}{2}}{\frac{1}{\sqrt{2}}} = \frac{\sqrt{2}}{2} = \frac{\omega}{r} \checkmark$

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

فاصله مبدأ خط $\rightarrow \frac{|b|}{\sqrt{1+\frac{1}{r^2}}} = \sqrt{r} \rightarrow |b| = \omega \rightarrow b = \pm \omega \rightarrow y = -\frac{1}{r}x + \omega$

طول از مبدأ $= \omega$ فاصله از مبدأ $= 1$
 فاصله نقطه برقرار $\rightarrow \sqrt{1+\omega^2} = \omega \sqrt{2} \checkmark$

اختلاف بین ۲ خط و معادله محصور $\rightarrow$ مساحت $\rightarrow \frac{\omega}{r} = \text{اختلاف طول از مبدأ}$

$y+mx = x+r \rightarrow y = (1-m)x+r$
 $my - \varepsilon x = 2m \rightarrow y = \frac{\varepsilon x + 2m}{m} = \frac{\varepsilon}{m}x + 2$
 طول از مبدأ $= \frac{-r}{1-m}$
 طول از مبدأ $= \frac{-r}{\frac{\varepsilon}{m}} = \frac{-rm}{\varepsilon}$
 $\left| \frac{-r}{1-m} - \frac{-rm}{\varepsilon} \right| = \frac{\omega}{r} \rightarrow \left| \frac{-rm - \varepsilon + \varepsilon m}{\varepsilon(1-m)} \right| = \frac{\omega}{r}$

حاصل ضرب در برابر $\frac{c}{a} \times \frac{c'}{a'} = \frac{-18}{-r} \times \frac{r}{-r} = -18 \rightarrow -3$

قمری خطی به نقطه $y = 2x-3$
 $y = 2x-3$
 $y' = 2x'-4$
 $y'' = 2x''-9 \checkmark$

$M \left| \begin{matrix} x \\ y \end{matrix} \right| \begin{matrix} r \\ -r \end{matrix}$
 $y' = 2x' + b$
 $-r = 2(r) + b$
 $b = -4$

قمری نسبت به خط $y = 2x + \omega$
 $y' = -x' + b$
 $2 = -1 + b \rightarrow b = 3$
 $A' \left| \begin{matrix} a \\ b \end{matrix} \right| \begin{matrix} -1 \\ 4 \end{matrix}$
 $\rightarrow A' \left| \begin{matrix} -1 \\ 4 \end{matrix} \right| \begin{matrix} -r \\ 4 \end{matrix} \rightarrow a = -r, b = 4 \checkmark$

جواب سوال $2b-a = 15$
 $2(-4) - (-r) = -12 + r = 15 \rightarrow r = 27$