

مسئله ۱۱
در صفحه ۱۳

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$$-4 = 2a + b$$

$$1 = 2a + b$$

$$-14 = 2a \rightarrow a = -7 \rightarrow \frac{a}{b} = \frac{1}{7} \Rightarrow 1 = \frac{7}{7} + b \rightarrow b = \frac{4}{7}$$

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$$\rightarrow y = \frac{1}{7}x + \frac{4}{7}$$

$$\text{طول ضلع BC} = \sqrt{(2-1)^2 + (-1-4)^2} = \sqrt{25} = 5$$

$$\begin{cases} y = -4x + b \\ 2 = -a + b \end{cases} \rightarrow a = \frac{4}{3}, b = \frac{5}{3} \Rightarrow y = -\frac{4}{3}x + \frac{5}{3}$$

$$x^2 + 2y + 4x - 5 = 0$$

$$\text{طول AH} = \frac{|1+12-5|}{\sqrt{9+16}} = \frac{8}{5} = 1.6$$

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طول ضلع BC، ۳ واحد بیشتر از طول ارتفاع AH است

$$\frac{y}{x} = \frac{1}{2}$$

$$\frac{y}{x} = \frac{a}{b} \rightarrow \frac{a}{b} = \frac{1}{2} \rightarrow a = 2$$

بجای آن ها برابر است

$$\frac{y}{x} = \frac{1}{2} \text{ و } y - 2x = 2 \Rightarrow \text{طول} = \frac{|14 - 2|}{\sqrt{14 + 4}} = \frac{12}{\sqrt{18}} = \frac{12}{3\sqrt{2}} = \frac{4}{\sqrt{2}} = \frac{4\sqrt{2}}{2} = 2\sqrt{2}$$

$$S = \pi r^2 = \frac{9}{4}\pi$$

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$$2 = 2a + b$$

$$1 = 4a + b$$

$$\begin{cases} 2 = 2a + b \\ 1 = 4a + b \end{cases} \rightarrow a = -1 \rightarrow b = 4 \rightarrow y = x - 2$$

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$$y = -x + 5$$

$$y = x - 2 \text{ و } y = 3 \rightarrow x = \frac{5}{2} \Rightarrow H = \frac{5}{2} \Rightarrow \text{طول} = \sqrt{\left(\frac{5}{2} - \frac{4}{2}\right)^2 + \left(\frac{5}{2} - \frac{4}{2}\right)^2} = \sqrt{\frac{1}{2} + \frac{1}{2}} = \sqrt{1} = 1$$

$$(m-1)x + (d-m)y - 1 = 0$$

$$\frac{d}{m} = \frac{m+1}{d-m}$$

بجای آن ها رابطه عکس داریم

$$(m+1)x - (2m-4)y + 1 = 0$$

$$\frac{d}{m} = \frac{m+1}{2m-4} \Rightarrow \frac{m+1}{2m-4} = \frac{m-1}{2-m}$$

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$$\rightarrow 2m^2 - 3m^2 - 3m = 2m^2 - 4m - 1 \cdot m + 2 \Rightarrow -m^2 - m + 2 = 2m^2 - 4m - 2 \Rightarrow 3m^2 - 3m - 4 = 0$$

$\rightarrow \Delta < 0 \rightarrow$ هیچ نقطه تقاطعی وجود ندارد

مرحله ۱: $\begin{cases} y = 3 - x \\ y = 2x - 1 \end{cases} \Rightarrow 3 - x = 2x - 1 \Rightarrow 3 + 1 = 2x + x \Rightarrow 4 = 3x \Rightarrow x = \frac{4}{3}$
 $\Rightarrow 0 = 3x - 4 \Rightarrow x = \frac{4}{3} \Rightarrow y = 1$

مرحله ۲: $\begin{cases} x + y = 1 \\ 2 + y = 1 \end{cases} \Rightarrow y = -1 \Rightarrow x = 2$

مرحله ۳: $\begin{cases} y = 2x - 1 \\ y = 1 - x \end{cases} \Rightarrow 2x - 1 = 1 - x \Rightarrow 3x = 2 \Rightarrow x = \frac{2}{3}$

$M = \frac{\frac{4}{3} + 0}{\frac{4}{3} - 1} = \frac{4}{1} = 4 \Rightarrow L = \sqrt{(\frac{4}{3})^2 + (1 - \frac{4}{3})^2} = \frac{5}{3} \Rightarrow \frac{AM}{AH} = \frac{5}{4}$

نقطه A، B، C را به هم وصل می‌کنیم (از طریق خط مستقیم)

مرحله ۲: $\frac{AH}{AC} = \frac{|1 + 1 - 4|}{\sqrt{2}} = \frac{2}{\sqrt{2}} = \sqrt{2}$

$\frac{AM}{AH} = \frac{\frac{5}{3}}{\frac{2}{\sqrt{2}}} = \frac{5\sqrt{2}}{6}$

$\frac{A}{B} = \frac{b}{a} \Rightarrow \frac{1}{2} = \frac{b}{a} \Rightarrow b = \frac{a}{2}$
 $\Rightarrow \frac{1}{2} = \frac{1}{2} \Rightarrow \text{فاصله} = \sqrt{1^2 + 1^2} = \sqrt{2}$

$my = fx + 2m \Rightarrow y = \frac{f}{m}x + 2$
 $y + mx = x + 2 \Rightarrow y = x(1 - m) + 2$
 $\Rightarrow \left| \frac{f}{m} - \frac{1}{1 - m} \right| = \frac{2}{r} \Rightarrow \frac{f}{m} - \frac{1}{1 - m} = \frac{2}{r} \Rightarrow \frac{f(1 - m) - m}{m(1 - m)} = \frac{2}{r}$

$\Rightarrow \frac{f - fm - m}{m(1 - m)} = \frac{2}{r} \Rightarrow \frac{f - m - fm}{m(1 - m)} = \frac{2}{r} \Rightarrow \frac{f - m - fm}{m(1 - m)} = \frac{2}{r}$
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$\frac{A}{A'} = \frac{yA + yA'}{x + xA'} \Rightarrow \frac{1}{-3} = \frac{yA + yA'}{x + xA'} \Rightarrow xA' = f$

$yA = \frac{yA + yA'}{x + xA'} \Rightarrow -3 = \frac{yA + yA'}{x + xA'} \Rightarrow yA' = -1$

$\frac{yA}{x} = 1 \Rightarrow -1 = \frac{yA}{x} \Rightarrow yA' = -1$

$\frac{A}{A'} = \frac{yA + yA'}{x + xA'} = 1 \Rightarrow \frac{yA + yA'}{x + xA'} = 1 \Rightarrow yA' = -1$

$\begin{cases} y = -x + 3 \\ y = x + 1 \end{cases} \Rightarrow x = 1, y = 2$

$\frac{A}{A'} = \frac{yA + yA'}{x + xA'} \Rightarrow -1 = \frac{yA + yA'}{x + xA'} \Rightarrow -1 = \frac{yA + yA'}{x + xA'}$

$\Rightarrow \frac{A'}{A} = \frac{yA + yA'}{x + xA'} \Rightarrow \frac{A'}{A} = \frac{yA + yA'}{x + xA'}$