

الکعبات سمت راست ۱ ترکیب در صورت کنیم یک عبارت درجه دومی بدست می آید عبارت سمت چپ مربع کامل است:

$$\frac{1}{x^2} + \frac{1}{(1-x)^2} + 1 = \frac{149}{9}$$

برای ضرب $\frac{1}{x}$ در $\frac{1}{1-x}$ است

$$\frac{1}{x} \left(\frac{1}{1-x} \right) = \frac{1}{x}$$

$$\frac{1-x+x}{-x^2+x} = \frac{1}{x} \rightarrow -x^2+x = x$$

$$\rightarrow x^2 - x + x = 0 \rightarrow \frac{-b}{a} = 1$$

جواب

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$$-x^2 + 4x - 1 > 0 \rightarrow x^2 - 4x + 1 < 0 \rightarrow (x-2)(x-2) < 0 \rightarrow x = [2, 2]$$

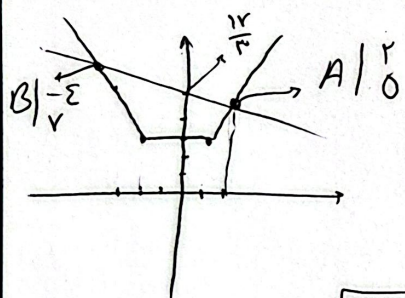
$$-x^3 + 4x^2 + 10x - 100 = -(x-5)(x+5)(x-2) > 0 \rightarrow (x-5)(x+5)(x-2) < 0 \rightarrow x = (-5, -2] \cup [2, 5]$$

$$x = (-\infty, -5] \cup [2, 5]$$

$$((-\infty, -5] \cup [2, 5]) \cap [2, 5] = \{2\}$$

یک جواب دارد $x=2$

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$$x > 1 \rightarrow y = x + 2 + x - 1 = 2x + 1 \quad \left. \begin{array}{l} x=2 \\ y=0 \end{array} \right\}$$

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

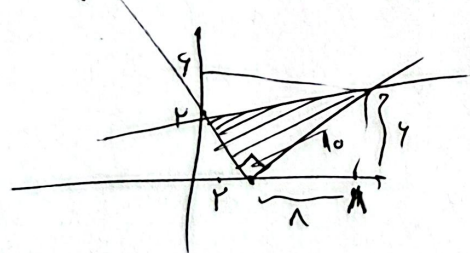
$$x < -1 \rightarrow y = -x - 2 - x + 1 = -2x - 1 \quad \left. \begin{array}{l} x=-2 \\ y=1 \end{array} \right\}$$

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

$$AB = \sqrt{\Delta x^2 + \Delta y^2} = \sqrt{1^2 + 1^2} = \sqrt{2} = 2\sqrt{10}$$

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$$y = \sqrt{x^2 - (x+2)} = \sqrt{(x-2)^2} = |x-2|$$



$$x > 2 \rightarrow x-2 = \frac{1}{2}x + 2 \rightarrow x=4 \quad y=2$$

$$x < 2 \rightarrow -x+2 = \frac{1}{2}x + 2 \rightarrow x=0 \quad y=2$$

$$S_{\text{ش}} = \frac{10 \times 2\sqrt{10}}{2} = 10\sqrt{10}$$

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زاویه	ضلع	مساحت
زاویه	x	$\frac{1}{x}$
ضلع	$x+9$	$\frac{1}{x+9}$
مساحت	20	$\frac{1}{20}$

$$\frac{1}{x} + \frac{1}{x+9} = \frac{1}{20} \rightarrow \frac{2x+9}{x^2+9x} = \frac{1}{20}$$

$$\rightarrow x^2 + 9x = 20x + 180$$

$$\rightarrow x^2 - 11x - 180 = 0 \rightarrow (x-18)(x+10) = 0$$

$$x = -10 \quad \boxed{x=18}$$

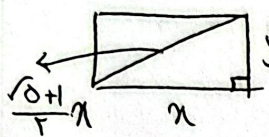
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طول به عرض = $\frac{\delta}{\epsilon}$ طول به عرض $\Rightarrow \frac{\delta + \eta}{\epsilon} = \frac{\sqrt{\delta + 1}}{2} \Rightarrow \delta + \eta = 2\sqrt{\delta + 1}$

$\Rightarrow \eta = 2\sqrt{\delta + 1} - \delta$

مقدار اضافه شده به طول

$\frac{\text{مستطیل طلایی}}{S} = \frac{f_x(\delta + 2\sqrt{\delta + 1} - \delta)}{\epsilon \times \delta} = \frac{2\sqrt{\delta + 1} + \epsilon}{\delta}$

 $\rightarrow$ فیثاغذس $\Rightarrow \left(\frac{\sqrt{\delta + 1}}{2} \eta\right)^2 - \eta^2 = y^2 \rightarrow y^2 = \frac{1 + \sqrt{\delta + 1}}{2} \eta^2$

$\frac{\eta^2}{y^2} = ?$

$\frac{4 + 2\sqrt{\delta + 1}}{\epsilon} = \frac{2 + \sqrt{\delta + 1}}{2} \eta^2$
 $\rightarrow \frac{\eta^2}{\frac{1 + \sqrt{\delta + 1}}{2} \eta^2} = \frac{2}{1 + \sqrt{\delta + 1}} = \frac{2 - 2\sqrt{\delta + 1}}{1 - \delta} = \frac{2 - 2\sqrt{\delta + 1}}{-\epsilon} = \frac{\sqrt{\delta + 1} - 1}{2} \rightarrow \text{جواب}$

$\sqrt{2a^2 + \epsilon a} = \epsilon - 2a \xrightarrow{\text{توان ۲}} 2a^2 + \epsilon a = 9a^2 + \epsilon - 4\epsilon a \rightarrow 7a^2 - 14a + \epsilon = 0$

$\xrightarrow{\text{روش رومی}} a^2 - 14a + \epsilon a = 0 \rightarrow (a - 7)(a - \epsilon) = 0 \rightarrow a = \frac{\epsilon}{7} = \left(\frac{\epsilon}{\sqrt{\epsilon}}\right)$
 $\rightarrow a = \frac{1\epsilon}{\sqrt{\epsilon}} = \sqrt{\epsilon}$

$\frac{a+1}{a} = \frac{\frac{\epsilon}{\sqrt{\epsilon}} + \frac{\epsilon}{\sqrt{\epsilon}}}{\frac{\epsilon}{\sqrt{\epsilon}}} = \frac{4}{\sqrt{\epsilon}} = \frac{4}{\sqrt{\epsilon}} \rightarrow \text{جواب}$

$\frac{\sqrt{x+1}}{\sqrt{x-1} + 3} - \frac{\sqrt{x+1}}{3 - \sqrt{x-1}} = \left(\frac{x-1}{\sqrt{x-1}}\right) \cdot \frac{1}{\sqrt{x+1}} \cdot \sqrt{x+1} \left(\frac{1}{\sqrt{x-1} + 3} - \frac{1}{3 - \sqrt{x-1}}\right) = \sqrt{x-1}$
 $\frac{(\sqrt{x-1})^2}{\sqrt{x-1}} = \sqrt{x-1} \left(\frac{3 - \sqrt{x-1} - \sqrt{x-1} - 3}{10 - x}\right) = \frac{-2\sqrt{x-1}}{10 - x}$

$\rightarrow \frac{\sqrt{x+1} \times (-2\sqrt{x-1})}{10 - x} = \sqrt{x-1} \rightarrow -2\sqrt{x+1} = 10 - x \xrightarrow{\text{توان ۲}} 4x + \epsilon = 100 + x^2 - 20x$

$\rightarrow x^2 - 24x + 94 = 0 \rightarrow [x = 12 + \sqrt{48}] \vee x = 12 - \sqrt{48} < 0 \times$ (یک ریشه مثبت دارد)

$\frac{1}{\sqrt{2-x} + \epsilon} - \frac{1}{2 - \sqrt{2-x}} = \frac{2-x}{\delta \sqrt{2-x}} \rightarrow \frac{2 - \sqrt{2-x} - 2 - \sqrt{2-x}}{2 - \epsilon + x} = \frac{-2\sqrt{2-x}}{2 + x}$

$\frac{-2\sqrt{2-x}}{2 + x} = \frac{2-x}{\delta \sqrt{2-x}} \rightarrow (-2\sqrt{2-x})(\delta \sqrt{2-x}) = 2 - x^2$

$= 10(2-x) = \epsilon - x^2 \rightarrow x^2 + 10x - \epsilon = 0$

$-10 + 10x$

$(x+10)(x-1) = 0$

ریشه مثبت ندارد $\rightarrow$ جواب

خرج منفی است $\rightarrow x = 2$

منفی $\rightarrow x = -10 \times$