

$$\frac{\Delta + x}{4} = \frac{1 + \sqrt{5}}{2} \Rightarrow 4 + 4\sqrt{5} = 10 + 2x \Rightarrow 2x = 4\sqrt{5} - 6 \Rightarrow x = 2\sqrt{5} - 3$$

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$$\Rightarrow S_{\text{ملائی}} = (\Delta + 2\sqrt{5} - 3) \times 4 = (2 + 2\sqrt{5}) \times 4 = 8 + 8\sqrt{5}$$

$$\frac{S_{\text{ملائی}}}{S_{\text{ادی}}}} = \frac{8 + 8\sqrt{5}}{4 \times 8} = \frac{8 + 8\sqrt{5}}{32} = \frac{2 + 2\sqrt{5}}{8} \quad \checkmark$$

$$\text{قطر} = \sqrt{x^2 + y^2} \rightarrow \frac{\sqrt{x^2 + y^2}}{x} = \frac{1 + \sqrt{5}}{2}$$

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$$\Rightarrow 2\sqrt{x^2 + y^2} = x + x\sqrt{5} \xrightarrow{\text{مربع کردن}} 4x^2 + 4y^2 = x^2 + 5x^2 + 2\sqrt{5}x^2$$

$$\Rightarrow 4y^2 = (2 + 2\sqrt{5})x^2 \Rightarrow \frac{x^2}{y^2} = \left(\frac{x}{y}\right)^2 = \frac{4}{2 + 2\sqrt{5}} = \frac{2}{1 + \sqrt{5}} \quad \checkmark$$

$$\sqrt{2a^2 + 4a} = 2 - 3a$$

$$\Rightarrow 2a^2 + 4a = 4 + 9a^2 - 12a \Rightarrow 7a^2 - 16a + 4 = 0 \Rightarrow a = \frac{2}{7} \quad \checkmark$$

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$$\Rightarrow \frac{a+1}{a} = \frac{\frac{2}{7} + 1}{\frac{2}{7}} = \frac{9}{2} \quad \checkmark$$

$$\text{مخرج مشترک} \rightarrow \frac{\sqrt{x+1} (3 - \sqrt{x-1}) - \sqrt{x+1} (\sqrt{x-1} + 3)}{9 - (x-1)} = \frac{x-1}{\sqrt{x-1}} = \sqrt{x-1}$$

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$$\frac{3\sqrt{x+1} - \sqrt{x^2-1} - \sqrt{x^2-1} - 3\sqrt{x+1}}{10-x} = \sqrt{x-1} \Rightarrow \frac{-2\sqrt{x^2-1}}{10-x} = \sqrt{x-1}$$

$$-2\sqrt{x-1}\sqrt{x+1} = (10-x)\sqrt{x-1} \Rightarrow -2\sqrt{x+1} = 10-x$$

$$\Rightarrow 4(x+1) = x^2 + 100 - 20x \Rightarrow x = \frac{12 + 4\sqrt{3}}{2} \quad \checkmark \rightarrow \text{یک ریشه مثبت}$$

$$\begin{cases} \sqrt{x-1} \neq 0 \Rightarrow x-1 \neq 0 \Rightarrow x \neq 1 \\ x \neq 1 \\ x \geq -1 \\ x \geq 1 \end{cases}$$

$$12 - 4\sqrt{3} \quad \text{غیر مثبت}$$

$$\text{مخرج مشترک} \rightarrow 2 - \sqrt{2-x} - (\sqrt{2-x} + 2) = \frac{\sqrt{2-x}}{\Delta}$$

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$$\Rightarrow -2\sqrt{2-x} = \frac{\sqrt{2-x}}{\Delta} \Rightarrow -10\sqrt{2-x} = \sqrt{2-x} \Rightarrow \sqrt{2-x} = 0 \Rightarrow x = 2 \quad \checkmark$$

غیر مثبت
مخرج را منفی کند

$$\Rightarrow \text{صفر ریشه مثبت} \quad \checkmark$$

$$x \neq 0, \pm 1$$

$$\frac{(1-x)^2 + x^2}{(1-x)^2 x^2} = \frac{140}{9} \Rightarrow \frac{2x^2 - 2x + 1}{x^4 - 2x^2 + x^2} = \frac{140}{9}$$

(2)

$$\Rightarrow 18x^4 - 18x + 9 = 140x^4 - 280x^2 + 140x^2 \Rightarrow 140x^4 - 280x^2 + 140x^2 + 18x - 9 = 0$$

$$\rightarrow (5x-1)(5x-3)(10x^2-10x-3) = 0$$

$$x = \frac{1}{5}$$

$$x = \frac{3}{5}$$

$$x = \frac{5 \pm \sqrt{55}}{10}$$

$$\rightarrow \frac{1}{5} + \frac{3}{5} + \frac{5 + \sqrt{55}}{10} + \frac{5 - \sqrt{55}}{10} = \frac{10}{10} = 1$$

(2)

$$-x^2 + 4x - 8 \geq 0 \Rightarrow x \leq 4$$

$$-x^3 + 4x^2 + 28x - 100 = -(x-4)(x-5)(x+5) \geq 0 \Rightarrow x = 4$$

(2)

$$x=4 \rightarrow \sqrt{4 + \sqrt{-44 + 44 + 100 - 100}} + \sqrt{14 + \sqrt{-14 + 24 - 8}} = \frac{4+2}{x+2} = 7$$

$$\Rightarrow \text{مقادیر قرار} \Rightarrow x = 4$$

یک جواب

$$3y + x = 17 \Rightarrow y = \frac{-x + 17}{3}$$

(2)

$$\begin{cases} x+2+x-1 = 2x+1 & x \geq 1 \rightarrow 2x+1 = \frac{-x+17}{3} \Rightarrow x=2, y=5 \\ x+2+1-x = 3 & -2 < x < 1 \rightarrow \frac{-x+17}{3} = 3 \Rightarrow -x+17=9 \Rightarrow x=8 \\ -x-2+1-x = -2x-1 & x \leq -2 \rightarrow -2x-1 = \frac{-x+17}{3} \Rightarrow x=-4, y=7 \end{cases}$$

A(2,5)

دو نقطه نیست

$$\Rightarrow AB = \sqrt{(2 - (-4))^2 + (5 - 7)^2} = \sqrt{40} = 2\sqrt{10}$$

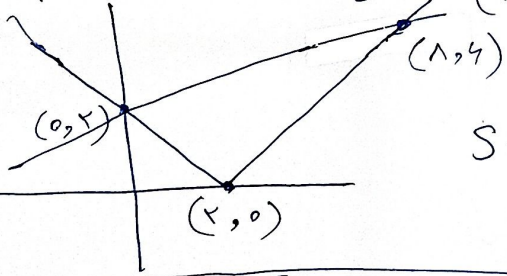
B(-4,7)

$$\sqrt{x^2 - 4x + 4} = \sqrt{(x-2)^2} = |x-2| < \begin{cases} x-2 & x \geq 2 \\ 2-x & x < 2 \end{cases}$$

(2)

$$\begin{cases} x-2 \geq 2-x \Rightarrow x=2, y=0 \\ x-2 \geq \frac{1}{2}x+2 \Rightarrow x=8, y=7 \\ 2-x \geq \frac{1}{2}x+2 \Rightarrow x=0, y=2 \end{cases}$$

نقاط
برخورد



$$S = \frac{1}{2} \begin{vmatrix} 2 & 0 & 1 \\ 8 & 7 & 1 \\ 0 & 2 & 1 \end{vmatrix} = \frac{1}{2} \times 24 = 12$$

(2)

$$x \rightarrow \frac{1}{x}$$

$$x+9 \rightarrow \frac{1}{x+9}$$

$$\frac{1}{x} + \frac{1}{x+9} = \frac{1}{20} \Rightarrow 20(x+9) + 20x = x(x+9)$$

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$$\Rightarrow 20x + 180 + 20x = x^2 + 9x \Rightarrow x^2 - 31x - 180 = 0 \Rightarrow x = -5$$

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