

$$\frac{x}{y} = \frac{a}{c} \Rightarrow x = \frac{a}{c}y$$

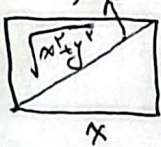
$$\frac{x+a}{y} = \frac{1+\sqrt{a}}{2} \Rightarrow x+a = \frac{1+\sqrt{a}}{2}y$$

$$S = x \cdot y$$

$$\left\{ \begin{array}{l} \text{مستطیل طلایی} \\ \text{مستطیل ادبی} \end{array} \right. = \frac{x_1 \cdot y_1}{x_2 \cdot y_2} = \frac{\frac{1+\sqrt{a}}{2}y \times y}{\frac{a}{c}y \times y} \Rightarrow \frac{2(1+\sqrt{a})}{a} \Rightarrow \boxed{0,4(1+\sqrt{a})}$$

$$\frac{\text{قطر}}{x} = \frac{1+\sqrt{a}}{2} \Rightarrow \frac{\sqrt{x^2+y^2}}{x} = \frac{1+\sqrt{a}}{2} \Rightarrow \sqrt{x^2+y^2} = \frac{1+\sqrt{a}}{2}x \Rightarrow x^2+y^2 = \frac{1+\sqrt{a}}{2}x^2$$

$$y^2 = \left(\frac{1+\sqrt{a}}{2} - 1\right)x^2 \Rightarrow \frac{x^2}{y^2} \Rightarrow \frac{x^4}{\left(\frac{1+\sqrt{a}}{2}\right)^2 x^4} \Rightarrow \frac{1}{\frac{1+\sqrt{a}}{2}}$$

$$\frac{2}{1+\sqrt{a}} = \boxed{\frac{\sqrt{a}-1}{2}}$$


$$\sqrt{ka^2+ca} = c-a \Rightarrow ka^2+ca = c^2+a^2-2ca \Rightarrow 7a^2-12a+c=0$$

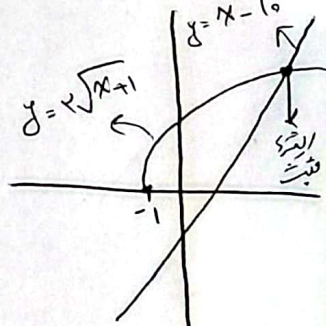
$$\Delta = 144-112 = 32 \rightarrow a = \frac{12 \pm \sqrt{32}}{14} = \left(\frac{2}{7}\right) \quad \left(\frac{16}{14}\right)$$

$$\frac{a+1}{a} \begin{cases} a=\frac{2}{7} \rightarrow \frac{9}{7} = \left(\frac{1}{\sqrt{a}}\right) \\ a=\frac{16}{14} \rightarrow \frac{4}{7} = \left(\frac{1}{\sqrt{a}}\right) \end{cases}$$

$$\frac{\sqrt{x+1}(c-\sqrt{x-1}-\sqrt{x-1}-c)}{c^2-(x-1)} = \sqrt{x-1}$$

$$\frac{-2\sqrt{x-1}\sqrt{x+1}}{10-x} = \sqrt{x-1} \rightarrow 2\sqrt{x+1} = x-10$$

یک رابطه مثبت دارند.



$$\frac{2-\sqrt{2-x}-\sqrt{2-x}-2}{c-2+x} \Rightarrow \frac{-2\sqrt{2-x}}{2+x} = \frac{2-x}{a\sqrt{2-x}} = -10(\sqrt{2-x})(\sqrt{2-x}) =$$

$$-10(2-x) = (2+x)(2-x) \Rightarrow -10 = 2+x \Rightarrow \boxed{x=-12}$$

ریشه مثبت ندارد

$$\frac{1}{x^2} + \frac{1}{(1-x)^2} = \frac{14}{9} \Rightarrow \left(\frac{1}{x} + \frac{1}{1-x}\right)^2 - 2\left(\frac{1}{x(1-x)}\right) = \frac{14}{9} \Rightarrow \left(\frac{1}{x(1-x)}\right)^2 = \frac{14}{9}$$

$$t^2 - 2t = \frac{14}{9} \Rightarrow (t-1)^2 = \frac{149}{9} \Rightarrow \begin{cases} t-1 = \frac{\sqrt{149}}{3} \Rightarrow t = \frac{1+\sqrt{149}}{3} \\ t-1 = -\frac{\sqrt{149}}{3} \Rightarrow t = \frac{1-\sqrt{149}}{3} \end{cases}$$

$$\frac{1}{x(1-x)} = \frac{\sqrt{149}}{3} \Rightarrow -x^2 + x - \frac{\sqrt{149}}{3} = 0 \Rightarrow \begin{cases} s_1 = 1 \\ s_2 = 1 \end{cases} \Rightarrow \begin{cases} s_1 + s_2 = 2 \end{cases}$$

$$x+x \geq 0 \Rightarrow x \geq -2 \quad (1)$$

$$-x^2 + 4x - 1 \geq 0 \Rightarrow (x-2)(x-1) \leq 0$$

$$x \in [1, 2] \quad (2)$$

$$(1) \cap (2) \cap (3) \Rightarrow x = 1 \checkmark$$

$$\sqrt{1+50} + \sqrt{14+50} = 4 \Rightarrow x+1 = 4 \checkmark$$

$$x = 1 \leftarrow \text{...} \text{...} \text{...}$$

$$-x^2 + 4x + 1 \geq 0 \Rightarrow x \in [-1, 5]$$

$$-x^2(x-1) + 2(x-1) \geq 0$$

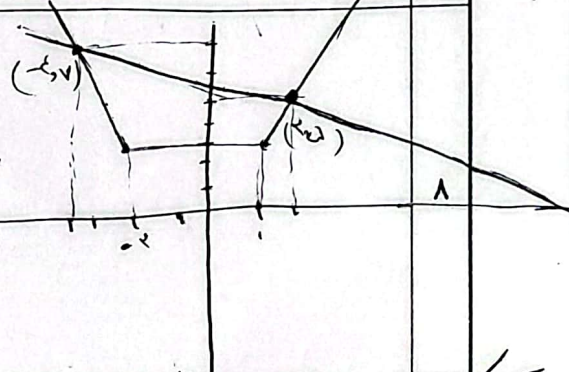
$$(x-1)(2-x) \geq 0 \Rightarrow (x-1)(2-x)(2+x) \geq 0$$

$$x \in [-1, 1] \cup [2, +\infty)$$

$$y = \frac{14-x}{x}$$

$$y = |x-2| + |x-1|$$

$$\sqrt{(x+1)^2 + (2-x)^2} = \sqrt{50} \Rightarrow 2\sqrt{50} \text{ (Abstände)}$$



$$2x+1 = \frac{14-x}{x} \Rightarrow 4x+1 = 14-x \Rightarrow x=3, y=2$$

$$-2x-1 = \frac{14-x}{x} \Rightarrow -4x-1 = 14-x \Rightarrow x=-5, y=-3$$

$$y = \sqrt{(x-2)^2} \Rightarrow x-2 \geq 0 \Rightarrow x \geq 2 \Rightarrow y = |x-2|$$

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

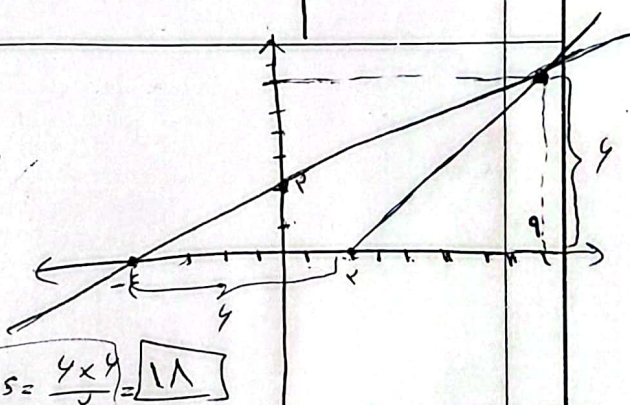
$$|x-2| = \frac{1}{2}x + 2 \Rightarrow$$

$$\frac{1}{2}x + 2 = x - 2 \Rightarrow x = 4, y = 4$$

$$x = 0, y = 2$$

$$\frac{1}{2}x + 2 = 2 - x \Rightarrow x = 0, y = 2$$

$$\text{مساحة} = \frac{4 \times 4}{2} = 8$$



$$\text{فرقا} = \frac{1}{x} + \frac{1}{x+9} = \frac{1}{x_0} \Rightarrow \frac{x+9+x}{(x)(x+9)} = \frac{1}{x_0} \Rightarrow$$

$$\frac{(2x+9)}{(x)(x+9)} = \frac{1}{x_0} \Rightarrow x_0(x+11) = x^2 + 9x$$

$$\text{فرقا} = \frac{1}{x_0} = \frac{1}{11}$$

$$x^2 - 11x - 110 = 0 \Rightarrow (x-11)(x+10) = 0 \Rightarrow x = 11 \checkmark$$