

$y^2 - 2xy = 2x - 1 \Rightarrow y^2 = 2x^2 + 2x - 1 \Rightarrow \begin{cases} (x_1, y_1) \\ (x_2, y_2) \end{cases} \xrightarrow{m_1 = m_2} y_1 = y_2 \Rightarrow \begin{cases} y_1^2 = y_2^2 \\ y_1 = y_2 \end{cases}$ (زن) تابع است

$x = \frac{r}{y} \Rightarrow \frac{r}{y} \cos y = y \cos y \Rightarrow \cos y = 0 \Rightarrow y = \frac{\pi}{2} \neq \frac{3\pi}{2} \Rightarrow$ تابع نیست

$x + y = \sqrt{xy} \xrightarrow{\text{مربع}} x^2 + y^2 + 2xy = xy \Rightarrow x^2 + y^2 - 2xy = 0 \Rightarrow (x - y)^2 = 0 \Rightarrow x = y$ تابع است

$x(y^2 + 2) - y(y^2 + 2) = 0 \Rightarrow (x - y)(y^2 + 2) = 0 \Rightarrow x = y$ تابع است

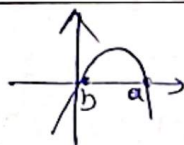
$|y| + x^2 = 2y \rightarrow \begin{cases} \text{if } y > 0 \rightarrow y = x^2 \\ \text{if } y = 0 \rightarrow y = \frac{\pi^2}{4} \\ \text{if } y < 0 \rightarrow y = \frac{x^2}{4} \end{cases}$ (زن) تابع است



$\{y\} + \{x\} = 1 \rightarrow \begin{cases} \text{if } x = -0.14 \dots \dots \dots \\ \text{if } y = 1/1, 1/2, 1/3, \dots \end{cases} \rightarrow$ تابع نیست
 (بسته در درستی می توانیم حد فزونی را استنتاج کنیم)

$f(x) = \begin{cases} 2x^2 - b & x \geq 3 \\ a + 2x & 0 \leq x \leq 3 \\ 2x^2 - b & x \leq -1 \end{cases} \Rightarrow x = 3 \Rightarrow 2(3)^2 - b = a + 7 \Rightarrow 18 - b = a + 7 \Rightarrow 18 - b = a + 7 \Rightarrow \boxed{a + b = 11}$

$f(x) = \sqrt{-x^2 - bx + a} \Rightarrow [a, b]$



طول شیب المثلث
 $\Rightarrow x = \frac{a+b}{2} = \frac{-b}{2(-1)} = \frac{-(-b)}{-2} = \frac{b}{-2} \Rightarrow \frac{a+b}{2} = \frac{b}{-2} \Rightarrow -a - b = b \Rightarrow \boxed{2b = -a}$
 $\Rightarrow ab = 2b \Rightarrow 2 = \frac{ab}{b} \Rightarrow a = 2, b = -1 \Rightarrow \boxed{S = a + b = +1}$

$\frac{x}{\sqrt{ax^2 + bx + c}} \rightarrow ax^2 + bx + c > 0, D_f = (-\infty, 2) \Rightarrow \begin{cases} a = 0 \\ 2b + c = 0 \Rightarrow \boxed{-2b = c} \end{cases}$

$3a + c - 2|b| = -2|b| + c + 3(0) \Rightarrow c + 3b = -2b + 3b = \boxed{+b}$
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$$y = \sqrt{\frac{x^2 - a + x + ab}{x + b}} = \sqrt{\frac{(x+a)(x+b)}{x+b}} \Rightarrow D_f = (x, +\infty)$$

$$\rightarrow \text{خط افق} = x \Rightarrow x + b = 0 \Rightarrow \boxed{b = -x}$$

(مجاوب افق)

$$y = \sqrt{x^2 - a} \Rightarrow x^2 - a \geq 0 \rightarrow x(x-1)(x+1) \geq 0$$

$\begin{array}{ccc} - & + & + \\ - & + & - \\ \hline & + & + \end{array}$

$$\Rightarrow D_f = [-1, 0] \cup [1, +\infty)$$

$$y = \frac{1}{\sqrt{|x| - 1}} \Rightarrow \begin{cases} |x| - 1 > 0 \Rightarrow |x| > 1 \Rightarrow [1, +\infty) \cup (-\infty, -1] \\ |x| - 1 \neq 0 \Rightarrow x \neq \pm 1 \end{cases} \rightarrow \boxed{\mathbb{R} - [-1, 1]}$$

$$\sqrt{\frac{1}{|x| - [a]}} \Rightarrow |x| - [a] \neq 0 \rightarrow |x| \neq [a] \Rightarrow D_f = \mathbb{R} - [a]$$

$\Rightarrow \frac{1}{|x| - [a]} \geq 0 \checkmark$

$$\sqrt{x} + \sqrt{y} = 4 \Rightarrow \sqrt{y} = 4 - \sqrt{x} \rightarrow \begin{cases} \sqrt{x} \geq 0 \rightarrow x \geq 0 \\ \sqrt{y} \geq 0 \rightarrow 4 - \sqrt{x} \geq 0 \rightarrow \sqrt{x} \leq 4 \rightarrow x \leq 16 \end{cases}$$

$D_f = [0, 16]$

$$y = \frac{1}{\sqrt{[x - \frac{1}{x}] + [x + \frac{x}{x}]}} \Rightarrow [x - \frac{1}{x}] + [x + \frac{x}{x}] > 0$$

$$[x + \frac{x}{x}] = [x + \frac{1}{x}] + 1 \Rightarrow 2[x - \frac{1}{x}] + 1 > 0 \Rightarrow [x - \frac{1}{x}] > -\frac{1}{2}$$

$$\Rightarrow [x - \frac{1}{x}] > -1 \Rightarrow x \geq \frac{1}{2} \Rightarrow D_f = [\frac{1}{2}, +\infty)$$

$$y = \sqrt{1 - \log(x - a)}, D_f = (b, c]$$

$$\Rightarrow \begin{cases} \log(x - a) \leq 1 \rightarrow 10 \geq x - a \rightarrow x \leq 10 + a \\ x - a > 0 \rightarrow x > a \end{cases}$$

$$\Rightarrow a < x \leq 10 + a, b < x \leq c \Rightarrow \begin{cases} b = a \\ c = 10 + a \end{cases} \Rightarrow c - b = 10 + a - a = 10$$

$$c - b = \frac{c - b}{1} = \frac{10}{1} = 10$$

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