

$$x^2 + y^2 - \varepsilon x + 2y + K \leq 0$$

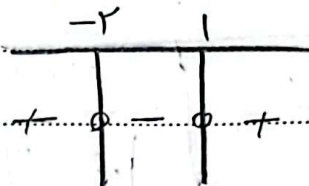
بایعانه

(1)

$$(y+1)^2 + (\sqrt{2}x - \sqrt{2})^2 \leq 0$$

$$K \leq 9 + 1 \leq 11 \rightarrow K = 11$$

$$f(x) = \begin{cases} x^2 + \varepsilon x & x \geq a \\ 2x + a + 1 & x \leq a \end{cases} \quad \text{ف(1) منتهی} \quad \text{پس } f(1) \leq \dots$$



if $x \leq a \rightarrow a^2 + \varepsilon a \leq 2a + a + 1 \rightarrow a^2 + \varepsilon a \leq 3a + 1$

$$a^2 + a + 1 \leq 0 \rightarrow (a+1)(a-1)$$

$$\begin{matrix} \downarrow & \downarrow \\ 0 & 1 \end{matrix}$$

$$f(1) = (1)^2 + \varepsilon(1) \leq 2(1) + 1 + 1 \leq \infty \quad \text{جواب}$$

$$f(x) = \begin{cases} 2x^2 - b & |x+1| \geq 2 \quad x+1 \geq 2 \rightarrow x \geq 1 \\ a + 2x & -3 \leq x \leq -1 \end{cases}$$

$$x \leq -3 \rightarrow 2x^2 - b \leq a + 2x$$

$$11 - b \leq a - 4 \rightarrow 11 + 4 \leq a + b \leq 15$$

$$y = \sqrt{4x - a} + \sqrt{b - 3x} \quad \{r\} \rightarrow 0 \quad \frac{b}{a} \leq \frac{r}{4} \quad (r)$$

$$\begin{aligned} 4x - a > 0 &\rightarrow 4x > a \rightarrow x > \frac{a}{4} \\ b - 3x > 0 &\rightarrow b > 3x \rightarrow \frac{b}{3} > x \end{aligned} \left\{ \frac{b}{3}, x > \frac{a}{4} \right.$$

$$\frac{b}{3} \leq \frac{a}{4} \left\{ \begin{array}{l} b \leq \frac{3a}{4} \\ a \leq \frac{4b}{3} \end{array} \right. \leftarrow \frac{b}{3} \leq \frac{a}{4} \leq 1 \leftarrow$$

$$\text{ii)} y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+2}} \rightarrow 2 - 2(1)(2) = -12$$

$$x+1 > 0 \rightarrow x > -1$$

$$[-1, +\infty)$$

$$\begin{array}{c} 4 \\ + \quad - \\ \hline \end{array}$$

$$(-\infty, 4]$$

$$D = [-1, 4] - \{3\}$$

$$\text{iii)} y = \sqrt{[x] - 2} + \sqrt{2 - [x]} \quad (-\infty, 3)$$

$$[r, \omega)$$

$$[r, 3)$$

$$\begin{array}{c} r \quad \omega \\ + \quad - \\ \hline \end{array}$$

$$\begin{array}{c} r \quad 3 \\ + \quad - \\ \hline \end{array}$$

$$[r, \omega) \cup (\omega, +\infty)$$

$$D \rightarrow \text{استخرجنا } D = \emptyset$$

الف) $y = \sqrt{x^2 - x - 6} \rightarrow (x-3)(x+2)$ (4)

$x^2 - 13x^2 + 36 \rightarrow x^2 \pm 6$

$x^2 - 13x^2 + 36 \rightarrow (x-2)(x-9) \rightarrow x^2 \pm 2, \pm 9$

$\downarrow 2 \quad \downarrow 9$

$(-\infty, 2) \cup (2, +\infty) - \{2\}$

نقطة حرجية

ب) $\sqrt{x^2 - 2x^2 - 5x + 6} \div (x-1) \rightarrow (x-1)(x-2)(x-3)$

$\sqrt{x^2 + 2x^2 - 5x - 6}$

$(-3, -2, -1, 1, 2, 3)$ $\rightarrow$ $(-3, -1, 2)$

$+ - - + - +$

$D = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$

الف) $y = \sqrt{[x] - 2} \quad [x] \geq 2 \rightarrow (-\infty, -2]$ (5)

$\frac{2x^2 + 4}{[x]^2 - 2[x] - 3}$

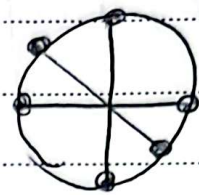
$([x]+1)([x]-3) \neq 0$

$\neq -1 \rightarrow [-1, 0)$ $\neq 3 \rightarrow \mathbb{R} - [3, 4)$

$D = \mathbb{R} - ([3, 4) \cup [-1, 0))$

الف) $\frac{\cot x + 1}{\tan x + 1} \rightarrow \tan x \neq -1$

$\tan x + 1 \rightarrow$ صورت و مخرج نباید صفر



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$$D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi - \frac{\pi}{2} \right\}$$

ب) $\sqrt{1 - \varepsilon \sin^2 x} \rightarrow 1 - \varepsilon \sin^2 x \geq 0 \rightarrow \sin^2 x \leq \frac{1}{\varepsilon}$



$$\left[k\pi - \frac{\pi}{2}, k\pi + \frac{\pi}{2} \right]$$

$$\frac{1}{2} \leq \sin x \leq \frac{1}{2} \rightarrow \cot x$$

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الف) $\sqrt{1 - \log \frac{1}{x-1}} \rightarrow 1 - \log \frac{1}{x-1} \geq 0 \rightarrow \log \frac{1}{x-1} \leq 1$

$$x-1 > 0 \rightarrow x > 1$$

$$\mathbb{R} \rightarrow \left[\frac{1}{e}, +\infty \right)$$

$x-1 > \frac{1}{e} \rightarrow x > \frac{1}{e} + 1$

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ب) $\sqrt{x^2 - x} \rightarrow x(x-1) \geq 0$

$$1 - \log \frac{x^2 - 3x}{\varepsilon}$$

$$x^2 - 3x \neq 0$$

$$x^2 - 3x$$

$$\log \varepsilon \neq 1$$

$$x(x-1) > 0$$

$$(-\infty, 0) \cup (1, +\infty)$$

$$x^2 - 3x \neq \varepsilon \rightarrow x^2 - 3x - \varepsilon \neq 0$$

$$(x+1)(x-\varepsilon) \neq 0 \rightarrow$$

$$\mathbb{R} \rightarrow (-\infty, 0) \cup (1, +\infty) - \{\varepsilon, -1\}$$

$$x \neq -1, -\varepsilon$$

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$$y \leq \sqrt{x^2 - 1} \quad x^2 - 1 \geq 0 \rightarrow$$

$$x^2 - 1 \geq 0$$

$$x^2 - 1 < 0 \leftarrow x^2 - 1 \geq 0$$

$$(x-1)(x+1)$$

$$\begin{array}{c} 1 \quad 1 \\ + \quad - \quad + \end{array}$$

$$D_f \subseteq [1, 3]$$

$$\rightarrow \left(\frac{3x+1}{x+2} \right)! \rightarrow \frac{3x+1}{x+2} \in W \quad \text{بجمله بنویسید}$$

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$$W \subseteq \frac{3W-1}{2W-3} \rightarrow K \subseteq \frac{1-3W}{2W-3} \rightarrow$$

$$D_f = \left\{ x \mid x = \frac{1-3K}{2K-3}, K \in W \right\}$$

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