

کتاب (۲)

پارامتر (۷)

عملی در

$$2x^2 + y^2 - 4x + 4y + k = 0 \rightarrow \begin{cases} 2x^2 - 4x = 2(x^2 - 2x) = 2((x-1)^2 - 1) \\ y^2 + 4y = (y^2 + 4y + 4) - 4 = (y+2)^2 - 4 \end{cases}$$

$$\Rightarrow 2(x-1)^2 - 2 + (y+2)^2 - 4 + k = 2(x-1)^2 + (y+2)^2 + k - 6 = 0$$

نقطه (۱، -۲) را بررسی کنید

$$\Rightarrow k - 6 \leq 0 \Rightarrow k \leq 6$$

$$f(x) = \begin{cases} x^2 + \epsilon x & x \geq a \\ 2x + a + \epsilon & x < a \end{cases} \quad \begin{matrix} \text{مرد بارز است} \\ \text{بامر بارز است} \end{matrix} \quad \begin{matrix} a^2 + \epsilon a = 2a + a + \epsilon \\ a^2 + \epsilon a \leq 2a + \epsilon \rightarrow a^2 + a - \epsilon \leq 0 \end{matrix}$$

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

$$f(1) \rightarrow (1)^2 + \epsilon(1) \leq \omega \\ 2(1) + 1 + \epsilon = \omega$$

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

$$\rightarrow 2(-3)^2 - b = a + 2(-2) \leq 1 \wedge -b \leq a - 4 \Rightarrow a + b = 14$$

$$y = \sqrt{4x - a} + \sqrt{b - 3x} \Rightarrow \begin{cases} 4x - a \geq 0 \Rightarrow x \geq \frac{a}{4} \\ b - 3x \geq 0 \Rightarrow x \leq \frac{b}{3} \end{cases}$$

$$\rightarrow Df = \left[\frac{a}{4}, \frac{b}{3} \right] \rightarrow \frac{a}{4} \leq \frac{b}{3} \leq 2 \rightarrow a \leq 8 \\ b = 4 \rightarrow \frac{b}{a} = \frac{4}{12} = \frac{1}{3}$$

$$y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+3x+2}}$$

$$\textcircled{1} \frac{x+1}{|x-3|} \geq 0 \rightarrow x+1 \geq 0 \rightarrow x \geq -1 \rightarrow x-3 \neq 0 \rightarrow x \neq 3$$

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چون دنا کو کمتر از صفر است پس دنا را
و صداره مثبت در پارا

① $\frac{4-x}{x^2+2x+2} \geq 0$ → صورت → $4-x \geq 0 \rightarrow x \leq 4$ → مزج

$\frac{4}{x^2+2x+2}$

→ $D_f = [-1, 4] - \{3\}$

⑤

ب) $\sqrt{[x]-2} + \sqrt{2-[x]} \rightarrow$ ① $[x]-2 \geq 0 \rightarrow [x] \geq 2 \rightarrow x \geq 2$
② $2-[x] \geq 0 \rightarrow [x] \leq 2 \rightarrow x < 3$

→ $\emptyset \rightarrow D_f = \emptyset$

الف) $y \pm \sqrt{\frac{x^2-x+4}{x^2-13x^2+34}} = \sqrt{\frac{(x-3)(x+2)}{(x-3)(x+3)(x-2)(x+2)}}$ ← سوال

→ $\frac{(x-3)(x+2)}{(x-3)(x+3)(x-2)(x+2)} \geq 0$ → تقس عدالت

$\frac{-3}{+} \frac{-2}{-} \frac{2}{-} \frac{3}{+}$

→ $D_f = (-\infty, -3) \cup (2, 3) \cup (3, +\infty)$

ب) $\sqrt{\frac{x^3-2x^2-5x+4}{x^3+2x^2-5x-4}} = \frac{x^3-2x^2-5x+4}{x^3+2x^2-5x-4} \geq 0$

① x^3-2x^2-5x+4 → $x^3-2x^2-5x+4 \div x-1$
 $-x^3+2x^2$
 $-5x+4$
 $+x^2-x$
 $-4x+4$

→ $(x-1)(x^2-x-4) = (x-1)(x-3)(x+2)$

⑥

② x^3+2x^2-5x-4 →

چون جذور فرایند با دنا زوج با جبر فرایند با
دنا فرد برابر است بر $x+1$ بخشید

$x^3+2x^2-5x-4 \div x+1$
 $-x^3-2x^2$
 $-5x-4$
 $-x^2-x$
 $-4x-4$

→ $(x+1)(x^2+x-4) = (x+1)(x+3)(x-2)$

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$$\frac{1}{x^2} \rightarrow \frac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)} \rightarrow \text{صورت} \rightarrow \frac{-3-2}{+} \frac{-1}{+} \frac{1}{-} \frac{2}{+} \frac{3}{-}$$

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

$$\text{الف) } y = \sqrt{-x} - 2 \rightarrow [-x] - 2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow x \leq -2 \rightarrow Df = (-\infty, -2]$$

$$\text{ب) } \frac{x^2 + 4}{[x]^2 - 2[x] - 3} \rightarrow \text{صورت} \rightarrow \text{صورت} \rightarrow \text{صورت} \rightarrow [x]^2 - 2[x] - 3 = ([x] - 3)([x] + 1)$$

$$\rightarrow [x] \neq 3 \rightarrow [3, 4) \rightarrow Df \subset \mathbb{R} - \{[-1, 0) \cup [3, 4)\}$$

$$\rightarrow [x] \neq -1 \rightarrow [-1, 0)$$

$$\text{ج) } y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \cot x \neq 0 \rightarrow x \neq k\pi \rightarrow \tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \rightarrow k\pi + \frac{\pi}{2}$$

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

$$\text{د) } y = \sqrt{1 - \varepsilon \sin^2 x} \rightarrow 1 - \varepsilon \sin^2 x \geq 0 \rightarrow \varepsilon \sin^2 x \leq 1$$

$$\rightarrow \sin^2 x \leq \frac{1}{\varepsilon} \rightarrow -\frac{1}{\sqrt{\varepsilon}} \leq \sin x \leq \frac{1}{\sqrt{\varepsilon}} \rightarrow Df = \left[k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4} \right]$$

$$\text{ه) } y = \sqrt{1 - \log \frac{x-1}{\frac{1}{x}}} \rightarrow 1 - \log \frac{x-1}{\frac{1}{x}} \geq 0$$

$$\log \frac{x-1}{\frac{1}{x}} \leq 1 \rightarrow x-1 \geq \frac{1}{x} \rightarrow x \geq \frac{3}{2}$$

$$\text{و) } x-1 > 0 \rightarrow x > 1 \rightarrow \frac{1}{x} \rightarrow x \geq \frac{3}{2} \rightarrow Df = \left[\frac{3}{2}, +\infty \right)$$

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ب) $y = \sqrt{x^2 - x}$ $\xrightarrow{\text{صورت}} x^2 - x \geq 0 \rightarrow x(x-1) \geq 0 \rightarrow \frac{0}{+ \phi - \phi +}$

$1 - \log x^2 - 3x \xrightarrow{\text{ع}} x^2 - 3x \neq 0 \rightarrow 1 \neq \log x^2 - 3x$

$\rightarrow x^2 - 3x = \xi \rightarrow x^2 - 3x - \xi \neq 0 \rightarrow (x - \xi)(x + 1) \neq 0 \rightarrow x \neq -1$

$x^2 - 3x \geq 0 \rightarrow (x - 3)(x) \geq 0 \rightarrow \frac{0}{+ \phi - \phi +}$ 5

$\Rightarrow D_f = (-\infty, -1) \cup (-1, 0) \cup (3, \infty) \cup (\xi, +\infty)$

ا) $y = \sqrt{x^2 - x^2 - 1} \rightarrow x^2 - x^2 - 1 \geq 0 \rightarrow x^2 \geq 1$ سرايا

$\rightarrow x^2 - x^2 \geq 1 \rightarrow x^2 - \xi x + 3 \leq 0 \rightarrow (x - 1)(x - 3) \leq 0$

$\rightarrow \frac{1}{+ \phi - \phi +} \rightarrow D_f = [1, 3]$ 5

ب) $\left(\frac{wx + \omega}{x + \xi} \right) |_0 \rightarrow \frac{wx + \omega}{x + \xi} \in W \rightarrow wx + \omega \in W, wx + \omega$

$wx + \omega \in W - \xi x \leq \omega - \xi W$

$\rightarrow x = \frac{\omega - \xi W}{w - \xi}$

$\rightarrow D_f = \left\{ x \mid x = \frac{\omega - \xi K}{w - \xi}, K \in W \right\}$