

$$2x'' + y'' - 4x + 4y + K = 0$$

$$2x'' - 4x + C_x = 0 \rightarrow \Delta = 0 \rightarrow b^2 - 4ac = 0 \rightarrow 16 - 16C_x = 0 \rightarrow C_x = 2$$

$$y'' + 4y + C_y = 0 \rightarrow \Delta = 0 \rightarrow 16 - 4C_y = 0 \rightarrow C_y = 4$$

$$K = C_x + C_y = 2 + 4 = \boxed{11}$$

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$$\text{if } x=a \rightarrow a'' + 4a = 3a + 2 \rightarrow a'' + a - 2 = 0 \rightarrow (a+2)(a-1) = 0$$

$$f(1) = x'' + 4x = 3x + 2 = \boxed{5}$$

$$\rightarrow a > 0 \rightarrow a = 1$$

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$$\text{if } x = -3 \rightarrow 2x'' - b = a + 2x \rightarrow 18 - b = a - 4 \rightarrow a + b = \boxed{22}$$

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$$\text{if } x = 2 \rightarrow y = \sqrt{4x-a} + \sqrt{b-3x} = \sqrt{11-a} + \sqrt{b-6}$$

$$\begin{matrix} \downarrow & \downarrow \\ (-\infty, 11] & [4, +\infty) \end{matrix}$$

$$a = 11, \quad b = 6 \rightarrow \text{از این دامنه نتوانیم عددی پیدا کنیم}$$

$$\frac{b}{a} = \frac{6}{11} = \boxed{\frac{6}{11}}$$

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$$\text{الف, } \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+4}}$$

$$D = [-1, +\infty) - \{3\} \quad D = [0, 4]$$

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

$$\text{ب, } \sqrt{[x]-4} + \sqrt{2-[x]}$$

$$[4, +\infty) \cap (-\infty, 2) = \emptyset$$

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الف) $y = \sqrt{\frac{x^2 - x - 6}{x^2 - 13x^2 + 124}} = \sqrt{\frac{(x-3)(x+2)}{(x+2)(x-2)(x+3)(x-3)}} \rightarrow \frac{-3 \quad -2 \quad 2 \quad 3}{+ \quad - \quad - \quad +}$

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

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

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

الف) $\sqrt{[-x] - 2} \rightarrow [-x] \geq 2 \rightarrow x \leq -2 \rightarrow D = (-\infty, -2]$

ب) $\frac{5x^2 + 4}{[x]^2 - 2[x] - 3} \rightarrow ([x] - 3)([x] + 1) \rightarrow \frac{-1 \quad 0 \quad 3 \quad 4}{+ \quad - \quad - \quad +}$

$D = (-\infty, 1) \cup [0, 3) \cup [4, +\infty)$

الف) $\frac{\cot x + 1}{\tan x + 1} \rightarrow \tan, \cot \neq \text{تدعى شذو}$, $\tan \neq -1$

$D = \mathbb{R} - \left\{ \frac{k\pi}{4}, k\pi + \frac{3\pi}{4} \right\}$

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

$D = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$

الف) $\sqrt{1 - \log_{\frac{1}{f}} x^{-1}} \rightarrow \log_{\frac{1}{f}} x^{-1} \leq 1 \quad x^{-1} \geq \frac{1}{f} \rightarrow x \geq \frac{f}{f} \rightarrow D = \left[\frac{f}{f}, +\infty \right)$

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ب) $\sqrt{x^2 - x} \rightarrow D = \frac{0}{+} \quad \frac{-}{-} \quad \frac{+}{+}$

$1 - \log_{\frac{1}{f}} x^{-1} \rightarrow \log_{\frac{1}{f}} x^{-1} \neq 1 \rightarrow x^{-1} - \frac{1}{f} \neq 0 \quad \text{ب) } x^{-1} > 0 \rightarrow \frac{0}{+} \quad \frac{-}{-} \quad \frac{+}{+}$

$D = (-\infty, -1) \cup (-1, 0) \cup (f, f) \cup (f, +\infty)$

الف) $\sqrt{f x^2 - x^2 - 1} \geq 0 \rightarrow f x^2 - x^2 > 1 \rightarrow x^2 - f x + 1 < 0 \quad \frac{1}{+} \quad \frac{-}{-} \quad \frac{+}{+}$

$D = [1, 3]$

ب) $\frac{ax+b}{cx+d} = y \rightarrow x = \frac{-dy+b}{cy-a} \rightarrow y = \left(\frac{rx+a}{rx+c} \right) \rightarrow x = \frac{-fk+a}{rk-c} \rightarrow$

$\{x | x = \frac{-fk+a}{rk-c}, k \in \mathbb{N}\}$