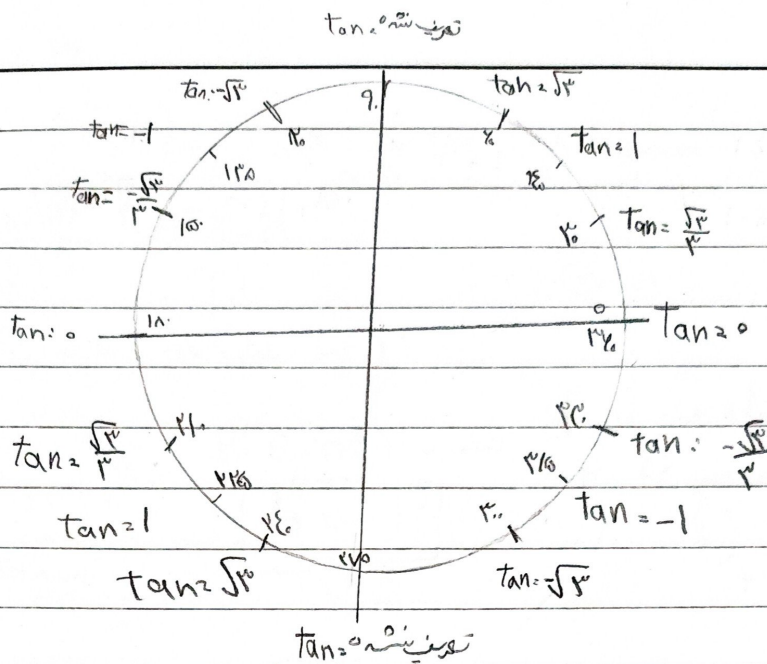




$$\sin \frac{\pi}{4} + \cos \pi + \tan \frac{\pi}{4} \Rightarrow \frac{1}{\sqrt{2}} + (-1) + 1(-1) = \frac{-2}{\sqrt{2}}$$

$$-\cos \frac{\pi}{4} + \sin \frac{\pi}{4} - \tan \frac{\pi}{4} \Rightarrow \frac{-\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} = \frac{-\sqrt{2}}{2}$$

$$\cot \frac{\pi}{4} + \cot \frac{\pi}{4} - \tan \frac{\pi}{4} \Rightarrow \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{2}$$

$$\cos(\sin \pi) + \sin(\cos \frac{\pi}{2}) = \cos(0) + \sin(0) = 1 + 0 = 1$$

$$f(x) = \begin{cases} x^2 + 2x & x \geq 1 \\ x^2 + 1 & x < 1 \end{cases} \Rightarrow x=1 \quad a^2 + 2a = 1a + 2(1) \Rightarrow a^2 + a - 2 = 0 \Rightarrow (a+2)(a-1) = 0$$

$$a < -2 \text{ or } a = 1$$

$$f(x) = \begin{cases} x^2 + 2x & x \geq 1 \\ x^2 + 1 & x < 1 \end{cases}$$

$$f(1) = 1^2 + 2(1) = 3$$

SUBJECT

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

$$\Rightarrow x+1 \leq -2 \rightarrow \boxed{x \leq -3}$$

$x=3$ در هر دو شرط کار می کند. پس

$$x = -3 \rightarrow 2x^2 - b \Rightarrow 18 - b$$

$$\rightarrow a + 2x \Rightarrow a - 6 \Rightarrow 18 - b = a - 6$$

$$\boxed{24 = a + b}$$

(الف) $y = \frac{1}{x^2 - 4x^2} \Rightarrow \frac{1}{x^2(x-4)} \rightarrow R \setminus \{0, 4\}$

0 4

$\Rightarrow y = \frac{1}{2x^2 + 4x^2 + 2x + 4} \Rightarrow \frac{1}{2x^2(x+2) + 2(x+2)} \Rightarrow D_f = R \setminus \{-2\}$

-2

(الف) $y = \sqrt{x^2 - 1} + \sqrt{x - 5} \Rightarrow x^2 - 1 \geq 0 \Rightarrow x^2 \geq 1 \Rightarrow \boxed{x \leq -1 \text{ یا } x \geq 1} \text{ (I)}$

$\Rightarrow x - 5 \geq 0 \Rightarrow \boxed{x \geq 5} \text{ (II)}$

$(I) \cap (II) = [5, +\infty)$

$\Rightarrow y = \frac{\sqrt{4-2x}}{\sqrt{4x-2}} \Rightarrow 4-2x \geq 0 \Rightarrow \boxed{2 \geq x} \text{ (I)}$

$(I) \cap (II) = (\frac{1}{2}, 2]$

$\Rightarrow 4x - 2 \geq 0 \Rightarrow 2x \geq 1 \Rightarrow \boxed{x \geq \frac{1}{2}} \text{ (II)}$



$$y = \sqrt{4x-a} + \sqrt{b-3x} \Rightarrow b \geq 3x$$

$$4x \geq a$$

دامنه عبارت های زیر را بدین صورت $(k, +\infty)$ یا به صورت $(-\infty, k)$ می باشد.
که اشتراک آن ها مساوی $\{2\}$ شده پس دامنه عبارت ها $[2, +\infty)$ و $(-\infty, 2]$ بوده است.

$$\left. \begin{aligned} b \geq 3x &\Rightarrow \boxed{b=4} \\ 4x \geq a &\Rightarrow \boxed{a=12} \end{aligned} \right\} \frac{b}{a} = \frac{4}{12} = \frac{1}{3}$$

الف) $y = \sqrt{\frac{x^2-x-4}{x^2-13x^2+4y}} \Rightarrow y = \sqrt{\frac{(x-3)(x+2)}{(x-4)(x^2-4)}} \Rightarrow$

$$\frac{-2}{+3} \frac{-2}{-4} \frac{2}{-4} \frac{2}{+3} \frac{x}{+}$$

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

ب) $y = \sqrt{\frac{x^3-2x^2-5x+4}{x^3+2x^2-5x-4}} \Rightarrow$ مجموع ضرایب = 0 یعنی $x=1$ و $x=-1$ جذر است.

$$\frac{(x-1)(x-2)(x+2)}{(x+1)(x+3)(x-2)} \Rightarrow \frac{-1}{+3} \frac{-2}{-4} \frac{-1}{+3} \frac{1}{-4} \frac{2}{+3} \frac{x}{+}$$

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

$\begin{array}{r} x^3-2x^2-5x+4 \quad \quad x-1 \\ -x^3+x^2 \\ \hline -x^2-5x+4 \\ +x^2-x \\ \hline -4x+4 \\ 4x-4 \\ \hline 0 \end{array}$	$\begin{array}{r} x^3+2x^2-5x-4 \quad \quad x+1 \\ -x^3-x^2 \\ \hline x^2-5x-4 \\ -x^2-x \\ \hline -4x-4 \\ 4x+4 \\ \hline 0 \end{array}$	$D_f = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$
--	---	---

ج) $y = \sqrt{2[x]} \cdot 4 \Rightarrow 2[x] \geq 4 \Rightarrow [x] \geq 2 \Rightarrow D_f = [2, +\infty)$

د) $y = \sqrt{2[x]} - 5 \Rightarrow 2[x] \geq 5 \Rightarrow [x] \geq \frac{5}{2} \Rightarrow [x] \geq 3 \Rightarrow D_f = [3, +\infty)$

توضیحات

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$$y = \sqrt{\frac{x+1}{|x-2|}} + \sqrt{\frac{4-x}{x^2+2x+4}} \Rightarrow (I) \Rightarrow \frac{x+1}{|x-2|} \Rightarrow \frac{-1}{-x+2}$$

(I)

(II)

0, 1, 2

$$(II) \Rightarrow \frac{4-x}{x^2+2x+4} \Rightarrow \frac{4}{x^2+2x+4}$$

دسته بندی

$$(I) \cap (II) \Rightarrow \begin{array}{c} \text{---} \\ | \quad | \\ -1 \quad 4 \end{array}$$

$$D_f = [-1, 4]$$

$$y = \sqrt{x-4} + \sqrt{4-x} \Rightarrow [x] \geq 4 \Rightarrow [4, +\infty)$$

$$\Rightarrow x < 4 \Rightarrow (-\infty, 4)$$

$$D_f = \emptyset$$

$$\begin{array}{c} \text{---} \quad \text{---} \\ | \quad | \\ 4 \quad 4 \end{array}$$

استمراریت ندارند

