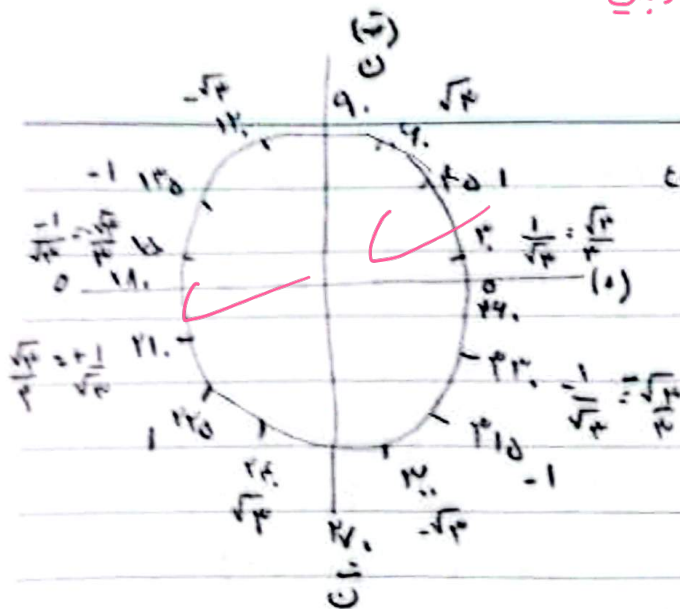


دایا و دهن خواه تلف ۲



$$\tan = \frac{\sin}{\cos}$$

۱

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

ب) $\cos \frac{5\pi}{4} + \sin \frac{\pi}{4} - 2 \sin \frac{\pi}{4} = -(-\frac{\sqrt{2}}{2}) + \frac{\sqrt{2}}{2} - 2(\frac{\sqrt{2}}{2}) = \frac{\sqrt{2}}{2}$

ج) $\cot \frac{\pi}{4} + 2 \cot \frac{\pi}{4} - 2 \tan \frac{5\pi}{4} = -\frac{1}{\sqrt{2}} + 2(\frac{1}{\sqrt{2}}) - 2(-\frac{1}{\sqrt{2}}) = \frac{3}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$

د) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{4}) = 1 + \sin(\pi \times \frac{1}{2}) = 1 + \sin(\frac{\pi}{2}) = 1 + 1 = 2$

۳

$$f(x) \begin{cases} x^2 + 6x & x \geq a \\ 2x + a + 2 & x < a \end{cases} \quad \begin{aligned} a^2 + 6a &= 2a + a + 2 \\ \rightarrow a^2 + 4a - 2 &= 0 \quad (a+2)(a-1) = 0 \\ a &= -2 \\ a &= 1 \end{aligned}$$

$a = -2 \Rightarrow \begin{cases} x^2 + 6x & x \geq -2 \\ 2x & x < -2 \end{cases} \quad f(1) \Rightarrow x^2 + 6x = 1 + 6 = 7$

$a = 1 \Rightarrow \begin{cases} x^2 + 6x & x \geq 1 \\ 2x + 3 & x < 1 \end{cases}$

۴

$$f(x) = \begin{cases} 2x^2 - 6 & |x+1| \geq 2 \rightarrow \begin{aligned} x+1 \geq 2 &\rightarrow x \geq 1 \\ x+1 \leq -2 &\rightarrow x \leq -3 \end{aligned} \\ a + 2x & -3 \leq x \leq 1 \end{cases}$$

$x = -3 \Rightarrow 11 - 6 = a - 4 \Rightarrow a + 6 = 15$

$$\text{الف) } y = \frac{1}{x^3 - 4x^2} \quad x^3 - 4x^2 \neq 0 \quad x^2(x-4) \neq 0 \quad 15$$

$$\longrightarrow D = \mathbb{R} - \{0, 4\}$$

$$\text{ب) } y = \frac{1}{2x^3 + 5x^2 + 2x + 4} \quad 2x^3 + 5x^2 + 2x + 4 \neq 0$$

$$x(2x^2 + 5x + 2) \neq 0$$

$$2(x^2 + 2x + 1) + x + 2 \neq 0 \rightarrow$$

$$2(x+1)(x+1) \neq 0 \quad D = \mathbb{R} - \{-1\}$$

$$\text{الف) } y = \sqrt{x^2+1} + \sqrt{x-2} \quad 9$$

$$x^2 - 1 \geq 0 \quad (x-1)(x+1) \geq 0$$

$$\frac{-1}{+1-1} \quad (-\infty, -1] \cup [1, +\infty)$$

$$x-2 \geq 0 \quad x \geq 2 \quad [2, +\infty)$$

$$\Rightarrow [2, +\infty)$$

$$\text{ب) } y = \frac{\sqrt{4-3x}}{\sqrt{4x-4}} \quad 4-3x \geq 0 \rightarrow x \leq \frac{4}{3} \quad (-\infty, \frac{4}{3}]$$

$$4x-4 \geq 0 \rightarrow \frac{4x}{4} \geq \frac{4}{4} \rightarrow x \geq 1 \quad (\frac{4}{3}, +\infty)$$

$$D = (\frac{4}{3}, 1]$$

$$y = \sqrt{4x-a} + \sqrt{b-4x} \quad D_f = \{2\}$$

$$12-a=0 \quad a=12 \quad -V$$

$$b-4=0 \quad b=4$$

$$\frac{b}{a} = \frac{4}{12} = \frac{1}{3} \quad V$$

$$الف) y = \sqrt{\frac{x^2 - x - 4}{x^4 - 13x^2 + 44}} \quad \frac{x^2 - x - 4}{x^4 - 13x^2 + 44} \geq 0 \quad \Delta$$

$$\frac{(x^2 - 4)(x^2 - 1)}{(x^2 - 4)(x^2 - 4)} \geq 0 \quad \frac{-2 \quad -1 \quad 2 \quad 2}{+\frac{1}{2} \quad -\frac{1}{2} \quad -\frac{1}{2} \quad +\frac{1}{2}}$$

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

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

$$\frac{(x-1)(x+2)(x-2)}{(x+1)(x-2)(x+2)} \geq 0$$

$$\begin{array}{r} x^4 - 2x^2 - 5x + 4 \mid x-1 \\ - x^4 + x^2 \\ \hline -x^2 - 5x + 4 \\ - -x^2 + x \\ \hline -4x + 4 \\ - -4x + 4 \\ \hline 0 \end{array} \quad \begin{array}{c} \downarrow \\ (x+2)(x-1^2) \end{array}$$

$$\begin{array}{r} x^4 + 2x^2 - 5x - 4 \mid x+1 \\ - x^4 + x^2 \\ \hline 3x^2 - 5x - 4 \\ - 3x^2 + 3x \\ \hline -4x - 4 \\ - -4x - 4 \\ \hline 0 \end{array} \quad \begin{array}{c} \downarrow \\ (x-2)(x+1^2) \end{array}$$

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

$$الف) y = \sqrt{2[x] - 1} \quad 2[x] - 1 \geq 0 \quad [x] \geq \frac{1}{2} \quad x \geq \frac{1}{2} \quad [2, +\infty)$$

$$ب) \sqrt{2[x] - 5} \quad 2[x] - 5 \geq 0 \quad [x] \geq \frac{5}{2} \Rightarrow x \geq \frac{5}{2} \quad [2.5, +\infty)$$

این را می‌توانیم به صورتی زیاده

$$10. \text{ الف) } y = \sqrt{\frac{n+1}{|n-3|}} + \sqrt{\frac{4-n}{n^2+2n+2}} \quad \frac{n+1}{|n-3|} \geq 0$$

$$n+1 \geq 0 \quad n \geq -1$$

$$|n-3| \neq 0 \quad [-1, +\infty) - \{3\}$$

$$n-3 \neq 0 \\ n \neq 3$$

1.5

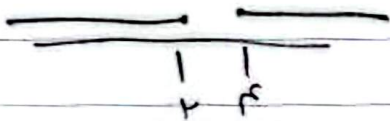
$$ب.) y = \sqrt{[n]-4} + \sqrt{4-[n]}$$

$$[n]-4 \geq 0 \quad 4-[n] \geq 0$$

$$[n] \geq 4 \quad [n] \leq 4$$

$$[4, +\infty) \quad (-\infty, 4]$$

ماترک اشتراک



$$10. \text{ الف) } y = \sqrt{\frac{n+1}{|n-3|}} + \sqrt{\frac{4-n}{n^2+2n+2}} \quad \begin{cases} \frac{n+1}{|n-3|} \geq 0 \rightarrow n \geq -1, n \neq 3 \text{ I} \\ \frac{4-n}{n^2+2n+2} \geq 0 \rightarrow n \leq 4 \text{ II} \end{cases}$$

به فضا مقدماتی مفرغ!

Δ < 0، محاسبه مثبت و بدون مقدماتی

$$I \cap II \rightarrow D_f = [-1, 3) \cup (3, 4] \subseteq [-1, 4] - \{3\}$$