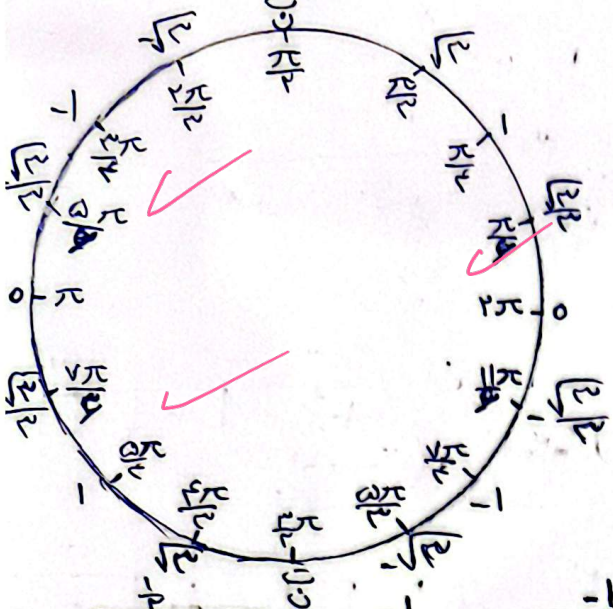


1405 آذرین

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ا) $\sin \frac{\pi}{6} (1^\circ) + \cos \pi (180^\circ) + 2 \tan \frac{\pi}{4} (45^\circ) \Rightarrow \frac{1}{2} - 1 - 2 = \boxed{-\frac{3}{2}}$
 ب) $-\cos \frac{2\pi}{5} (72^\circ) + \sin \frac{3\pi}{5} (108^\circ) - 2 \sin \frac{\pi}{5} (36^\circ) = -(-\frac{\sqrt{5}}{4}) + \frac{\sqrt{5}}{4} - 2(\frac{\sqrt{5}}{4}) = \boxed{\frac{\sqrt{5}}{2}}$
 ج) $\cot \frac{\pi}{4} (45^\circ) + 2 \cot \frac{3\pi}{4} (135^\circ) - 2 \tan \frac{\pi}{6} (30^\circ) \Rightarrow -\frac{\sqrt{3}}{3} + 2(\frac{\sqrt{3}}{3}) - 2(\frac{1}{\sqrt{3}}) = \boxed{\frac{\sqrt{3}}{3}}$
 د) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{2}) \Rightarrow \cos(0) + \sin(\pi \cdot 0) \Rightarrow 1 + 0 = \boxed{1}$

$$\left. \begin{matrix} x^2 + 4x & x \geq a \\ 2x + a + 1 & x \leq a \end{matrix} \right\} \Rightarrow \left. \begin{matrix} a^2 + 4a \\ 2a + a + 1 \end{matrix} \right\} \Rightarrow a^2 + 4a = 2a + a + 1 \Rightarrow a^2 + a - 1 = 0 \Rightarrow \frac{(a+2)(a-1)}{1} \Rightarrow a > 0 \Rightarrow \boxed{1}$$

$f(x) = \begin{cases} x^2 + 4x & x \geq 1 \\ 2x + 3 & x \leq 1 \end{cases} \Rightarrow f(1) = 2(1) + 3 = \boxed{5}$

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

$\Rightarrow 2(-3)^2 - b = a + 2(-3) \Rightarrow 18 - b = a - 6 \Rightarrow a + b = \boxed{24}$

ا) $y = \frac{1}{x^2 - 4x^2} \Rightarrow x^2 - 4x^2 \neq 0 \Rightarrow x^2(x-4) \Rightarrow \frac{0}{-4} = \frac{0}{-4} + \Rightarrow D_f = \mathbb{R} \setminus \{0, 4\}$

ب) $y = \frac{1}{2x^2 + 4x^2 + 2x + 4} \Rightarrow 2x^2 + 4x^2 + 2x + 4 \neq 0$

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

الف) $y = \sqrt{x^2 - 1} + \sqrt{x - 2} \Rightarrow x^2 - 1 \geq 0, x - 2 \geq 0 \Rightarrow (-\infty, -1] \cup [2, +\infty) \cup [2, +\infty) \Rightarrow \boxed{[2, +\infty)}$

ب) $y = \frac{\sqrt{6-3x}}{\sqrt{6x-3}} \Rightarrow \frac{1}{\frac{1}{\sqrt{6x-3}}} \Rightarrow \frac{1}{\frac{1}{\sqrt{6x-3}}} \Rightarrow \left(\frac{1}{2}, +\infty \right) \cup (-\infty, 2] \Rightarrow \boxed{(\frac{1}{2}, 2]}$

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$$\frac{x^2 - x - 5}{(x-1)(x+2)} \Rightarrow \frac{-1}{x-1} + \frac{2}{x+2} \quad (2)$$

$$\textcircled{1}, \textcircled{2} \Rightarrow \frac{-r \quad -r \quad r \quad r}{+\frac{1}{2} - \frac{1}{2} - \frac{1}{2} + \frac{1}{2}} \Rightarrow (-\infty, -r) \cup (r, +\infty)$$

b) $y = \sqrt{\frac{x^5 - 7x^3 - 6x + 5}{x^5 + 7x^3 - 6x - 5}}$

$\Rightarrow (x-1)(x-2)(x+2)$
 $\Rightarrow (x+1)(x+2)(x-2)$

$x^5 - 7x^3 - 6x + 5 \mid x-1$
- $x^5 + x^2$

- $8x^3 - 6x + 5$
+ $x^2 - x$

- $9x + 5$
+ $9x - 5$

0

$(x-1)(x+2)(x-2)$

$x^5 + 7x^3 - 6x - 5 \mid x+1$
- $x^5 + x^2$

- $8x^3 - 6x - 5$
+ $x^2 - x$

- $9x - 5$
+ $9x + 5$

0

$(x+1)(x+2)(x-2)$

$(-\infty, -2) \cup (-1, 1) \cup [2, \infty)$

$$y = \sqrt{r[x] - r} \Rightarrow r[x] - r \geq 0 \Rightarrow r[x] \geq r \Rightarrow [x] \geq r \Rightarrow \boxed{x \geq r}$$

$$y = \sqrt{r[x] - a} \Rightarrow r[x] - a \geq 0 \Rightarrow r[x] \geq a \Rightarrow [x] \geq m \Rightarrow \boxed{x \geq m}$$

$$\sqrt{\frac{x+1}{x-1}} + \sqrt{\frac{1-x}{x^2+2x+1}} \Rightarrow 1-x \geq 0 \Rightarrow x \leq 1 \Rightarrow (-\infty, 1] \cap [1, +\infty) = \underline{1}$$

$$\Rightarrow \Delta < 0$$

$$\downarrow$$

$$[1, 1] = \{1\}$$

ب) $\sqrt{[x]-r} + \sqrt{r-[x]}$

$\downarrow \qquad \qquad \downarrow$

$[x]-r \geq 0 \qquad r-[x] \geq 0$

$\Downarrow \qquad \qquad \Downarrow$

$[x] \geq r \qquad [x] \leq r$

$\Downarrow \qquad \qquad \Downarrow$

$x \geq r \qquad x \leq r$

$\Rightarrow \{x \mid (x \geq r) \cap (x \leq r)\} = \{r\}$

پس دامنه آن عضو یکتا است

پای صفرا خون!

(١٠-الف) $y = \sqrt{\frac{n+1}{|n-4|}} + \sqrt{\frac{4-n}{n^2+2n+2}}$ في فترتي معرفتي مفرد! $\Delta < 0$ ، محاوره مثبت وبدون معرفتي

$$\begin{cases} \frac{n+1}{|n-4|} \geq 0 \rightarrow n \geq -1, n \neq 4 \text{ I} \\ \frac{4-n}{n^2+2n+2} \geq 0 \rightarrow n \leq 4 \text{ II} \end{cases}$$

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