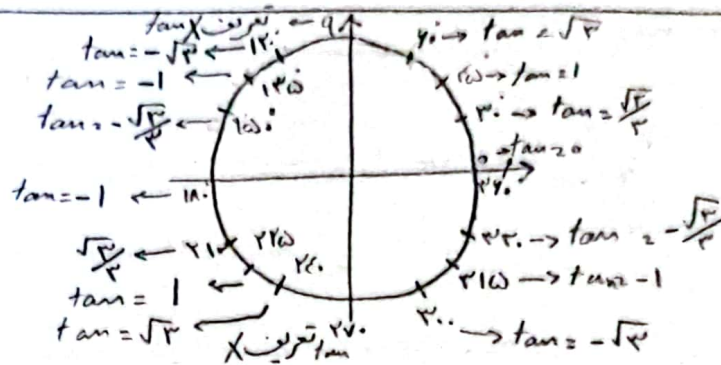




الف) $\sin \frac{\pi}{4} + \cos \pi + 2 \tan \frac{3\pi}{4} \rightarrow \sin 45^\circ + \cos 180^\circ + 2(\tan 135^\circ) = \frac{1}{\sqrt{2}} + (-1) + (-2) = -\frac{3}{\sqrt{2}}$

ب) $-\cos \frac{5\pi}{4} + \sin \frac{7\pi}{4} - 2 \sin \frac{\pi}{4} \rightarrow -\cos 225^\circ + \sin 315^\circ - 2(\sin 45^\circ) = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - 2(\frac{\sqrt{2}}{2}) = \frac{\sqrt{2}}{2}$

ج) $\cot \frac{\pi}{4} + 2(\cot \frac{\pi}{4} - 2 \tan \frac{5\pi}{4}) \rightarrow \cot 45^\circ + 2(\cot 45^\circ - 2 \tan 225^\circ) = \frac{\sqrt{2}}{2}$

د) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{4}) \rightarrow \cos 0 + \sin(90^\circ) \rightarrow 1 + 1 = 2$

بازای $n \geq a$ $a^2 + fa = 2a + a + 2 \rightarrow a^2 + a - 2 = 0$ $\begin{cases} a = -2 \\ a = 2 \end{cases}$

$f(n) = \begin{cases} n^2 + \epsilon_n & n \geq 1 \\ 2n + 3 & n \leq 1 \end{cases}$

$f(1) \rightarrow 2 \times 1 + 3 = 5$

$\begin{cases} 2n^2 - b & |n+1| \geq 2 \rightarrow \begin{cases} n+1 \geq 2 \rightarrow n \geq 1 \\ n+1 \leq -2 \rightarrow n \leq -3 \end{cases} \\ a + 2n & -2 \leq n \leq -1 \end{cases}$

بازای $n = -2$ $11 - b = a - 4 \rightarrow a + b = 15$

الف) $y = \frac{1}{n^2 - \epsilon_n} \rightarrow \frac{1}{n^2(n-1)} \rightarrow D_f = \mathbb{R} - \{0, 1\}$

ب) $y = \frac{1}{2n^2 + \epsilon_n + 2n + 4} \rightarrow \frac{1}{2n(n+1) + 4(n+1)} \rightarrow \frac{1}{(n+1)(2n+4)} \rightarrow D_f = \mathbb{R} - \{-2\}$

هرگاه $(+)$ در n ضرب شود $\Delta < 0$

$$\text{الف) } y = \sqrt{x^2-1} + \sqrt{x-2} \begin{cases} x-2 \geq 0 \rightarrow x \geq 2 \\ x^2-1 \geq 0 \rightarrow x \leq -1 \text{ or } x \geq 1 \end{cases} \xrightarrow{\cap} x \geq 2$$

$$\text{ب) } y = \frac{\sqrt{4-3x}}{\sqrt{4x-3}} \begin{cases} 4-3x \geq 0 \rightarrow 3x \leq 4 \rightarrow x \leq \frac{4}{3} \\ 4x-3 \geq 0 \rightarrow 4x \geq 3 \rightarrow x \geq \frac{3}{4} \end{cases} \xrightarrow{\cap} \frac{3}{4} \leq x \leq \frac{4}{3}$$

$D_f = [\frac{3}{4}, \frac{4}{3}]$

$$x=2 \rightarrow \sqrt{x-a} + \sqrt{b-x} = 0 \rightarrow a=12$$

$$\rightarrow b=7$$

$$\frac{b}{a} = \frac{1}{4}$$

$$\text{الف) } y = \sqrt{\frac{x^2-x-4}{x^2-13x^2+34}} \Rightarrow \frac{(x-2)(x+2)}{(x^2-9)(x^2-4)} \Rightarrow \frac{-2 \quad -2 \quad 2 \quad 2}{+ \quad - \quad - \quad +}$$

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

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

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

$$\text{الف) } y = \sqrt{2[x]-4} \quad 2[x]-4 \geq 0 \rightarrow [x] \geq 2 \quad (x \geq 2) \quad D_f = [2, +\infty)$$

$$\text{ب) } y = \sqrt{2[x]-5} \quad 2[x]-5 \geq 0 \rightarrow [x] \geq \frac{5}{2} \quad (x \geq \frac{5}{2}) \quad D_f = [\frac{5}{2}, +\infty)$$

$$\text{الف) } y = \sqrt{\frac{x+1}{|x-2|}} + \sqrt{\frac{4-x}{x^2+2x+1}} \begin{cases} 4-x \geq 0 \rightarrow x \leq 4 \\ \frac{x+1}{|x-2|} \geq 0 \rightarrow x \geq -1, x \neq 2 \end{cases} \xrightarrow{\cap} -1 \leq x \leq 4$$

$D_f = [-1, 4] - \{2\}$

$$\text{ب) } y = \sqrt{[x]-4} + \sqrt{2-[x]} \begin{cases} [x] \geq 4 \rightarrow x \geq 4 \\ [x] \leq 2 \rightarrow x < 3 \end{cases} \xrightarrow{\cap} \emptyset \rightarrow D_f = \emptyset$$