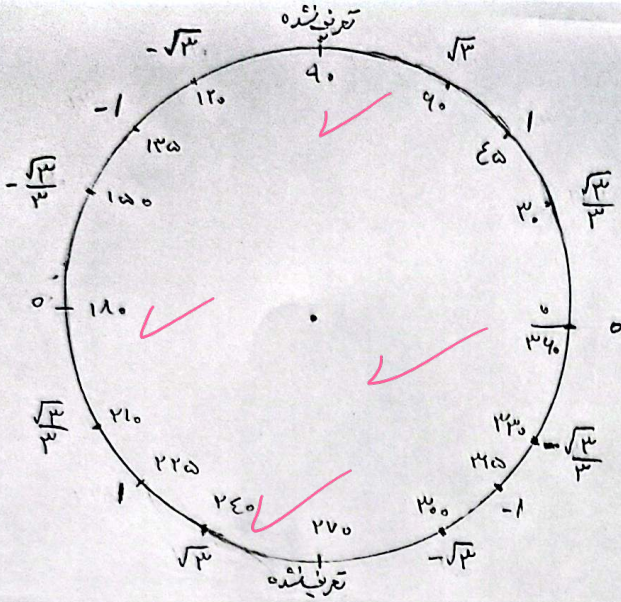


پارسی سماعی - یازدهم سپر B : تکلیف ۲ :
 ۲. آفرین علی دوم دب نوشت



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الف) $\sin \frac{\pi}{4} + \cos \pi + 2 \tan \frac{3\pi}{4} = \frac{1}{\sqrt{2}} + (-1) + 2(-1) = -\frac{5}{\sqrt{2}}$

ب) $-\cos \frac{5\pi}{4} + \sin \frac{\pi}{3} - 2 \sin \frac{4\pi}{3} = -(-\frac{\sqrt{2}}{2}) + \frac{\sqrt{3}}{2} - 2(-\frac{\sqrt{3}}{2}) = \frac{5\sqrt{3}}{2}$

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

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

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

$f(n) = \begin{cases} 2n^2 - b & |n+1| \geq 2 \rightarrow n \geq 1 \text{ و } n \leq -3 \\ a + 2n & -2 \leq n \leq -1 \end{cases}$
 $n = -3 \Rightarrow 12 - b = a - 4 \Rightarrow a + b = 16$

الف) $y = \frac{1}{n^2 - \varepsilon n^2} \quad n^2 - \varepsilon n^2 \neq 0 \Rightarrow n^2(n - \varepsilon) \neq 0 \Rightarrow D_f = \mathbb{R} - \{0, \varepsilon\}$

ب) $y = \frac{1}{2n^2 + \varepsilon n^2 + 2n + \varepsilon} \quad 2n^2 + \varepsilon n^2 + 2n + \varepsilon \neq 0 \Rightarrow 2n^2(n+2) + 2(n+2) \neq 0 \Rightarrow (n+2)(2n^2+2) \neq 0$
 $D_f = \mathbb{R} - \{-2\}$

الف) $y = \sqrt{x^2 - 1} + \sqrt{x - 2} \quad \begin{matrix} x^2 \geq 1 \rightarrow x \geq 1 \text{ I} \\ \rightarrow x \leq -1 \end{matrix} \quad x \geq 2 \text{ II} \quad I \cap II = x \geq 2$

ب) $\frac{\sqrt{4-2x}}{\sqrt{4x-2}} \quad \begin{cases} 4 \geq 2x \rightarrow x \leq 2 \\ 4x \geq 2 \rightarrow x \geq \frac{1}{2} \end{cases} \quad x \geq \frac{1}{2}$
 $D_f = (\frac{1}{2}, 2]$

$y = \sqrt{4x - a} + \sqrt{b - 2x} \quad 4x \geq a \rightarrow x \geq \frac{a}{4} \quad x = \frac{a}{4} = \frac{b}{2} = 2 \Rightarrow b = 4, a = 16$

$b \geq 2x \rightarrow \frac{b}{2} \geq x$
 $\frac{b}{a} \geq \frac{4}{16} = \frac{1}{4}$

$$\text{الف) } \sqrt{\frac{n^2 - n - 4}{n^2 - 13n^2 + 34}}$$

$$n^2 - n - 4 = 0 \Rightarrow n = 3, -2$$

$$\begin{array}{ccccccc} -3 & -2 & 1 & 3 & 4 \\ + & - & + & - & + & - & + \end{array}$$

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$$n^2 - 13n + 34 = 0 \Rightarrow n = 2, 9 \Rightarrow n = \pm 2, \pm 9$$

$$D_f = (-\infty, -3) \cup (2, 3) \cup (9, \infty)$$

$$\text{ب) } \sqrt{\frac{n^2 - n^2 - 5n + 4}{n^2 + 2n^2 - 5n - 4}}$$

$$\frac{-n^2 - 2n^2 - 5n + 4}{n^2 + 2n^2} \cdot \frac{n-1}{n^2 - n - 4}$$

$$\frac{-n^2 + 2n^2 - 5n - 4}{n^2 + 2n^2} \cdot \frac{n+1}{n^2 + n - 4}$$

$$\begin{array}{ccccccc} -3 & -2 & 1 & 1 & 2 & 3 \\ + & - & + & - & + & - & + \end{array}$$

$$\begin{array}{r} -n^2 - 5n + 4 \\ -n^2 + n \\ \hline -4n + 4 \\ -4n + 4 \\ \hline 0 \end{array}$$

$$\begin{array}{r} n^2 - 5n - 4 \\ -n^2 + n \\ \hline -4n - 4 \\ -4n - 4 \\ \hline 0 \end{array}$$

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

$$\text{الف) } \sqrt{r[n] - 2}$$

$$r[n] \geq 2 \Rightarrow [n] \geq 2 \Rightarrow n \geq 2$$

$$D_f = [2, \infty)$$

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$$\text{ب) } \sqrt{r[n] - 5}$$

$$r[n] \geq 5 \Rightarrow [n] \geq \frac{5}{r} \Rightarrow n \geq 3$$

$$D_f = [3, \infty)$$

$$\text{الف) } \sqrt{\frac{n+1}{|n-2|}} + \sqrt{\frac{4-n}{n^2 + 2n + 2}} \sim \Delta < 0$$

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

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$$\text{ب) } \sqrt{[n] - 2} + \sqrt{2 - [n]}$$

$$[n] \geq 2 \Rightarrow n \geq 2$$

$$2 \geq [n] \Rightarrow 2 \geq n$$

$$D_f = \emptyset$$