

تکلیف سر ۶

مسئله ۱

الف) $(n-1)(2n-1)(2n-3) \neq 0$: $n-1$ نقش پیدا کند.

مسئله ۱

$$\Rightarrow n-1 \neq 0 \Rightarrow n \neq 1 \quad \{ 2n-1 \neq 0 \Rightarrow n \neq \frac{1}{2} \} \quad \{ 2n-3 \neq 0 \Rightarrow n \neq \frac{3}{2} \}$$

$$O_p = \mathbb{R} - \left\{ 1, \frac{1}{2}, \frac{3}{2} \right\}$$

$$\Rightarrow (n-1)(n+1) = 0 \Rightarrow \begin{cases} n=1 \\ n=-1 \end{cases}$$

ب) $(n+1)(2n-1)(2n-3) \neq 0$: $n+1$ نقش پیدا کند.

$$O_p = \mathbb{R} - \left\{ -1, \frac{1}{2}, \frac{3}{2} \right\} \quad \hookrightarrow n+1 \neq 0 \Rightarrow n \neq -1$$

مسئله ۲

$$\text{الف) } \begin{cases} \text{I: } \sqrt{2} \sqrt{2n} \geq 0 \Rightarrow \sqrt{2n} \geq 0 \Rightarrow n \geq \frac{1}{2} \\ \text{II: } n \cdot \sqrt{2} \sqrt{2n} \neq 0 \Rightarrow n \neq \sqrt{2} \sqrt{2n} \Rightarrow n^2 \neq 2 \cdot 2n \Rightarrow n^2 + 2n - 4 \neq 0 \end{cases}$$

$$\Rightarrow n \neq \frac{-2 \pm \sqrt{4 + 16}}{2} \Rightarrow n \neq \frac{-2 \pm \sqrt{20}}{2} \Rightarrow n \neq \frac{-2 \pm 2\sqrt{5}}{2} \Rightarrow n \neq -1 \pm \sqrt{5}$$

$$\Rightarrow (n+1)(n-1) \neq 0 \Rightarrow n \neq -1, 1$$

$$O_p: I \cap II: \left(-\infty, \frac{1}{2} \right] - \{1\}$$

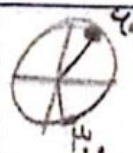
$$\text{ب) } \begin{cases} \text{I: } \sqrt{2n-1} \geq 0 \Rightarrow 2n-1 \geq 0 \Rightarrow n \geq \frac{1}{2} \\ \text{II: } n \cdot \sqrt{2n-1} \neq 0 \Rightarrow n \neq \sqrt{2n-1} \Rightarrow n^2 \neq 2n-1 \Rightarrow n^2 - 2n + 1 \neq 0 \end{cases}$$

$$\Rightarrow (n-1)^2 \neq 0 \Rightarrow n \neq 1$$

$$O_p: I \cap II: \left[\frac{1}{2}, +\infty \right) - \{1\}$$

$$\text{الف) } 2 \cos n - 1 \neq 0 \Rightarrow 2 \cos n \neq 1 \Rightarrow \cos n \neq \frac{1}{2}$$

$$O_p = \mathbb{R} - \left\{ 2k\pi \pm \frac{\pi}{3} \right\}$$



مسئله ۳

$$\text{ب) } 2 \sin n + 1 \neq 0 \Rightarrow 2 \sin n \neq -1 \Rightarrow \sin n \neq -\frac{1}{2}$$



$$O_p: \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right\}$$

تقسیم ۱ - الف:

$$\begin{array}{r}
 Km^2 - 10mP + 101m - 10 \quad | \quad m-1 \\
 - (Km^2 - KmP) \\
 \hline
 -10mP + 101m - 10 \\
 - (-10mP + 10m) \\
 \hline
 10m - 10 \\
 - (10m - 10) \\
 \hline
 0
 \end{array}$$

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تقسیم ۱ - ب:

$$\begin{array}{r}
 Km^2 - mP - 1m - K \quad | \quad m+1 \\
 - (Km^2 + KmP) \\
 \hline
 -KmP - 1m - K \\
 - (-KmP - Km) \\
 \hline
 -Km - K \\
 - (-Km - K) \\
 \hline
 0
 \end{array}$$

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$$Km^2 - KmP - K : m^2 - Km - 1P : (m-4)(m+P) = 0$$

$$\begin{cases} m = \frac{4}{P} = P \\ m = -\frac{1}{P} \end{cases}$$

$$2.) \left\{ \begin{array}{l} \text{I: } \cot n - 1 \neq 0 \Rightarrow \cot n \neq 1 \Rightarrow \text{Unit Circle with } \frac{\pi}{4} \text{ marked} \\ \text{II: } \sin n \neq 0 \\ \text{III: } \cos n \neq 0 \end{array} \right\} \Rightarrow D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}, k\pi + \frac{5\pi}{4}, k\pi + \frac{7\pi}{4} \right\}$$

$$3) \sqrt{r} \sin^2 n - \mu \neq 0 \Rightarrow \sqrt{r} \sin^2 n \neq \mu \Rightarrow \sin^2 n \neq \frac{\mu}{r} \Rightarrow \sin n \neq \pm \sqrt{\frac{\mu}{r}}$$



$$\Rightarrow D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{\mu}, k\pi - \frac{\pi}{\mu} \right\}$$

أ) $(n-1)(n-4) > 0$

$$\frac{1}{n-1} \quad \frac{1}{n-4} \Rightarrow D_f = (-\infty, 1) \cup (4, +\infty) : \text{مسألة ك}$$

ب) $(n-1)(n-5) < 0$

$$\frac{1}{n-1} \quad \frac{1}{n-5} \Rightarrow D_f = (1, 5)$$

ج) $(n+1)(n+5) \geq 0$

$$\frac{-1}{n+1} \quad \frac{-1}{n+5} \Rightarrow D_f = [-1, +\infty) \cup (-\infty, -5]$$

د) $(n-1)(n-4) \leq 0$

$$\frac{1}{n-1} \quad \frac{1}{n-4} \Rightarrow D_f = [1, 4]$$

أ) $\frac{(n-1)(n-4)}{n-5} \geq 0$

$$\frac{1}{n-1} \quad \frac{1}{n-4} \quad \frac{1}{n-5} : D_f = (-\infty, 1) \cup (4, 5) : \text{مسألة ك}$$

ب) $\frac{n^2 - 1}{(n-1)(n-5)} \geq 0$

$$\frac{-1}{n-1} \quad \frac{-1}{n-5} \Rightarrow D_f = (5, +\infty) \cup (-\infty, -1]$$

($n^2 - 1 = 0 \Rightarrow n^2 = 1 \Rightarrow n = \pm 1$)

أ) $\frac{(n-1)(n-4)}{n^2 - 1} \geq 0$

$$\frac{1}{n-1} \quad \frac{1}{n-4} \Rightarrow D_f = [4, +\infty)$$

مسألة ك

$(n-1)(n^2 + n + 1) \geq 0$
 $\Delta < 0$ (دائمًا موجب)

$$b) \quad n^2 - 1 \neq 0 \Rightarrow n^2 \neq 1 \Rightarrow n \neq \pm 1 \Rightarrow D_f = \mathbb{R} - \{\pm 1\}$$

$$الف) \quad n^2 - 4n > 0 \Rightarrow n(n-4) > 0$$

$$D_f = (-\infty, 0) \cup (4, +\infty)$$

$$ب) \quad 4 - n^2 > 0 \Rightarrow n^2 < 4 \Rightarrow -2 < n < 2$$

$$II: |n| - 2 > 0 \Rightarrow |n| > 2 \Rightarrow -2 > n > 2$$

$$III: |n| - 2 \neq 1 \Rightarrow |n| \neq 3 \Rightarrow n \neq \pm 3$$

$$\frac{0}{-} \quad \frac{4}{+} \quad \frac{0}{-} \quad \frac{4}{+}$$

سؤال ١٤

$$\left. \begin{array}{l} I \\ II \\ III \end{array} \right\} \Rightarrow D_f = (4, +\infty) \cup (-\infty, -2) - \{\pm 3\}$$

$$2.) \quad I: \frac{n^2 - \sqrt{n} + 4}{n - 4} > 0 \Rightarrow \frac{(n-4)(n-4)}{(n-4)} > 0 \Rightarrow \frac{0}{-} \quad \frac{4}{+} \quad \frac{0}{-} \quad \frac{4}{+} : (4, +\infty)$$

$$II: 1 - n > 0 \Rightarrow n < 1$$

$$III: 1 - n \neq 1 \Rightarrow n \neq 0$$

$$\left. \begin{array}{l} I \\ II \\ III \end{array} \right\} \Rightarrow I \cap II \cap III = (4, 1) - \{0\}$$

$$> \quad I: (n-4)(n-4) > 0 \quad \frac{4}{+} \quad \frac{4}{+} \quad \frac{0}{-} \quad \frac{4}{+} : (-\infty, 4] \cup [4, +\infty)$$

$$II: 4 - n^2 > 0 \Rightarrow n^2 < 4 \Rightarrow -2 < n < 2$$

$$II: n \neq 1$$

$$III: n > 0$$

$$\left. \begin{array}{l} I \\ II \\ III \end{array} \right\} \Rightarrow I \cap II \cap III = (0, 2] - \{1\}$$

$$الف) \quad \frac{n(n-1)}{n(n+1)}$$

$$\frac{n(n-1)}{n(n+1)} \rightarrow -1$$

	-1	0	1
$n(n-1)$	+	+	-
$n(n+1)$	+	-	+
D	+	-	+

سؤال ١٨

$$\frac{n(n-1)}{n(n+1)}$$

$$\frac{n(n-1)}{n(n+1)} \rightarrow -1$$

$$\frac{-1}{+} \quad \frac{0}{-} \quad \frac{1}{+}$$

$$n - f(n) = 0 \Rightarrow n = f(n) = n = 26 - 1$$

حل: $n = 26 - 1$

$$n - f(n) > 0$$

$$f(n) \rightarrow f(n) = 0 \Rightarrow n = 26 - 2$$

حل: $n = 26 - 2$

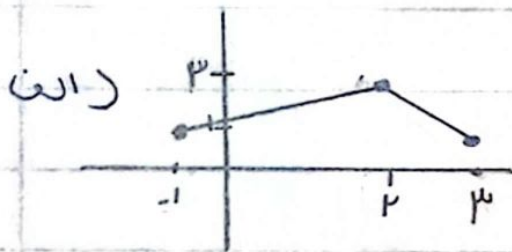
$$P_f = (-26 - 1] \cup [26 - 2]$$

$$-2 \quad -1 \quad 2 \quad 3$$

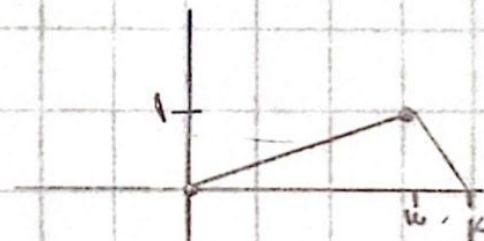
$$- \quad + \quad - \quad + \quad -$$

	-2	-1	2	3
$n - f(n)$	-	-	+	+
$f(n)$	+	-	-	+
P	-	+	-	+

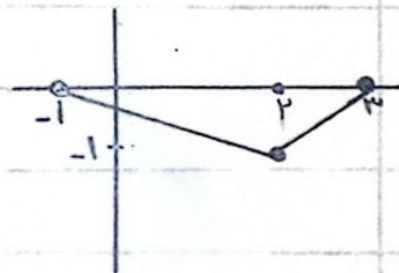
سؤال 10



ب)



ج)



د)

