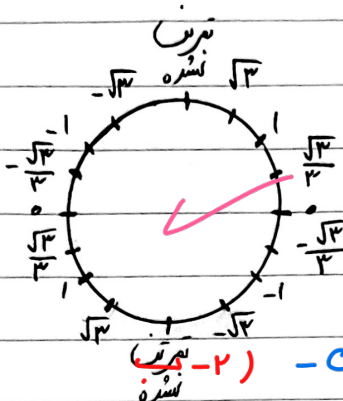


۱۸، ۱۷، ۱۶

یازدهم فصل دوم تکلیف ۲



۲

$$- \cos \frac{5\pi}{12} + \sin \frac{5\pi}{12} - 2 \sin \frac{5\pi}{12} = -(-\frac{\sqrt{2}}{2}) + \frac{\sqrt{2}}{2} - 2(-\frac{\sqrt{2}}{2}) = \frac{5\sqrt{2}}{2}$$

الف) $\sin \frac{\pi}{4} + \cos x + 2 \tan \frac{3\pi}{8} = \frac{1}{2} - 1 + 2 \left(\frac{-\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} \right) = \frac{1}{2} + 2(-1) = \frac{1}{2} - 2 = -\frac{3}{2}$

ب) $-\cos \frac{5\pi}{12} + \sin \frac{5\pi}{12} - 2 \sin \frac{5\pi}{12} = \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} - \sqrt{3} = 0$ ۱، ۱۵

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

د) $\cos(\sin x) + \sin(\pi \cos \frac{\pi}{4}) = \cos 0 + \sin \frac{\pi}{2} = 1 + 1 = 2$

۳) $x=a \Rightarrow a^2 + \varepsilon a = 2a + a + 2 \Rightarrow a^2 + a - 2 = (a+2)(a-1) = 0 \Rightarrow a+2=0 \vee a-1=0 \Rightarrow a=-2 \vee a=1$
 $f(1) = 1^2 + \varepsilon \cdot 1 = 1 + \varepsilon$ ۲

۴) $x=3 \Rightarrow f(x) = 18 - b = a - 9 \Rightarrow a + b = 27$ ۲

الف) $\frac{1}{x^3 - \varepsilon x^2} \Rightarrow x^3 - \varepsilon x^2 \neq 0 \Rightarrow x^2(x - \varepsilon) \neq 0 \Rightarrow x \neq 0, \varepsilon$ ۵

ب) $\frac{1}{2x^3 + \varepsilon x^2 + 2x + \varepsilon} \Rightarrow 2x^3 + \varepsilon x^2 + 2x + \varepsilon = (2x+1)(x^2 + \frac{\varepsilon}{2}x + \frac{\varepsilon}{2}) \neq 0 \Rightarrow 2x+1 \neq 0 \Rightarrow x \neq -\frac{1}{2}$
 $D_f = \mathbb{R} - \{-\frac{1}{2}\}$ ۲

الف) $\sqrt{x^2-1} + \sqrt{x-2} \geq 0 \Rightarrow \begin{cases} x^2-1 \geq 0 \Rightarrow x \leq -1, x \geq 1 \\ x-2 \geq 0 \Rightarrow x \geq 2 \end{cases} \Rightarrow x \geq 2$
 $D_f = [2, +\infty)$ ۲

ب) $\frac{\sqrt{4-3x}}{\sqrt{4x-3}} \geq 0 \Rightarrow \begin{cases} 4-3x \geq 0 \Rightarrow x \leq \frac{4}{3} \\ 4x-3 \geq 0 \Rightarrow x \geq \frac{3}{4} \end{cases} \Rightarrow \frac{3}{4} \leq x \leq \frac{4}{3}$
 $D_f = [\frac{3}{4}, \frac{4}{3}]$

$$4x - a \geq 0 \Rightarrow x \geq \frac{a}{4} \quad b - 3x \geq 0 \Rightarrow \frac{b}{3} \geq x \quad (-\infty, \frac{b}{3}] \cap [\frac{a}{4}, +\infty) \setminus \{2\} - V$$

$$\frac{b}{3} = \frac{a}{4} = 2 \Rightarrow b = 6, a = 12 \quad \frac{b}{3} - \frac{a}{12} = \frac{1}{2} \quad \textcircled{3}$$

الف) $\sqrt{\frac{x^2 - x - 6}{x^2 - 13x + 44}}$ $\frac{(x-3)(x+2)}{(x^2-4)(x^2-2)}$ $= \frac{(x-3)(x+2)}{(x+3)(x-3)(x-2)(x+2)}$ $\Rightarrow$ $\frac{-3}{+} \frac{-2}{-} \frac{2}{-} \frac{3}{+} \frac{-\infty}{+}$

$$D_f = (-\infty, -3) \cup (2, 4) \cup (4, +\infty)$$

ب)

ماده صفت د را نوشتن $\downarrow$

①

الف) $\sqrt{2[x]} - 2$ $2[x] \geq 4 \Rightarrow [x] \geq 2 \Rightarrow D_f = [2, +\infty)$ -4

ب) $\sqrt{2[x]} - 5$ $2[x] \geq 25 \Rightarrow [x] \geq 12.5 \Rightarrow D_f = [13, +\infty)$ $\textcircled{2}$

الف) $x+3$ $x+1 \geq 0 \Rightarrow x \geq -1$ $4-x \geq 0 \Rightarrow x \leq 4$ $D_f = [-1, 4] - \{3\}$ -1

ب) $[x] \geq 4$ $2 \geq [x] \Rightarrow D_f = \emptyset$ $\textcircled{3}$

$x \geq 4$ $x < 3$

ب-1) $y = \sqrt{\frac{x^3 - 2x^2 - 5x + 4}{x^3 + 2x^2 - 5x - 4}}$ $\sim \frac{x^3 - 2x^2 - 5x + 4}{x^3 + 2x^2 - 5x - 4} \geq 0 \Rightarrow$

مخروایب منفی بنویس بر (n-1) $\leftarrow$

مخروایب مثبت بر (n+1) $\leftarrow$

$$\frac{(n-1)(n^2 - n - 4)}{(n+1)(n^2 + n - 4)} \geq 0 \Rightarrow \frac{(n-1)(n-3)(n+2)}{(n+1)(n+3)(n-2)} \geq 0 \Rightarrow \frac{-3}{+} \frac{-2}{-} \frac{-1}{+} \frac{2}{-} \frac{3}{+}$$

1) $f = (-\infty, -3) \cup (-1, 2) \cup [3, +\infty)$