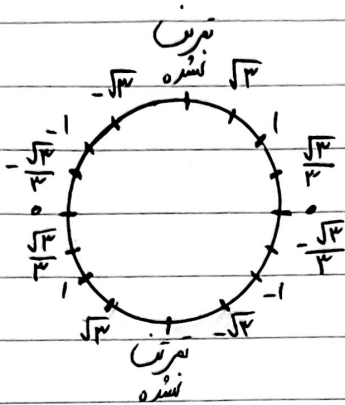


یازدهم فصل دوم تکلیف 2



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

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

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

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

۳) $x=a \Rightarrow a^2+5a=2a+a+2 \Rightarrow a^2+a-2=(a+2)(a-1)=0 \Rightarrow a+2=0 \vee a-1=0 \Rightarrow a=-2 \vee a=1$
 $f(1)=1^2+5(1)=6 \neq 2$
 $f(-2)=(-2)^2+5(-2)=-2 \neq 2$

۴) $f(x)=18-b=a-2 \Rightarrow a+b=20$

الف) $\frac{1}{x^3-2x^2} \Rightarrow x^3-2x^2 \neq 0 \Rightarrow x^2(x-2) \neq 0 \Rightarrow x \neq 0, 2$
 $D_f: \mathbb{R} - \{0, 2\}$

ب) $\frac{1}{2x^3+5x^2+2x+2} \Rightarrow 2x^3+5x^2+2x+2 \neq 0 \Rightarrow (x+2)(2x^2+x+1) \neq 0 \Rightarrow x \neq -2$
 $D_f: \mathbb{R} - \{-2\}$

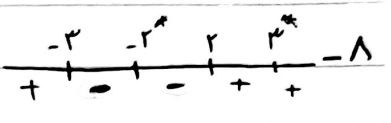
الف) $\sqrt{x^2-1} + \sqrt{x-2} \geq 0 \Rightarrow x^2-1 \geq 0 \Rightarrow x \leq -1 \vee x \geq 1$
 $x-2 \geq 0 \Rightarrow x \geq 2$
 $\{x \geq 2\}$
 $D_f: [2, +\infty)$

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

$$4x - a \geq 0 \Rightarrow x \geq \frac{a}{4}$$

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

$$\frac{b}{3} = \frac{a}{4} = 2 \Rightarrow b = 6, a = 8 \quad \frac{b}{a} = \frac{6}{8} = \frac{3}{4}$$

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

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

ب)

الف) $\sqrt{2[x] - 2}$ $2[x] \geq 2 \Rightarrow [x] \geq 1 \Rightarrow D_f = [1, +\infty)$ -4

ب) $\sqrt{2[x] - 2}$ $2[x] \geq 2 \Rightarrow [x] \geq 1, 2 \Rightarrow D_f = [2, +\infty)$

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

ب) $[x] \geq 2$ $2 \geq [x] \Rightarrow D_f = \emptyset$
 $x \geq 2$ $x < 3$