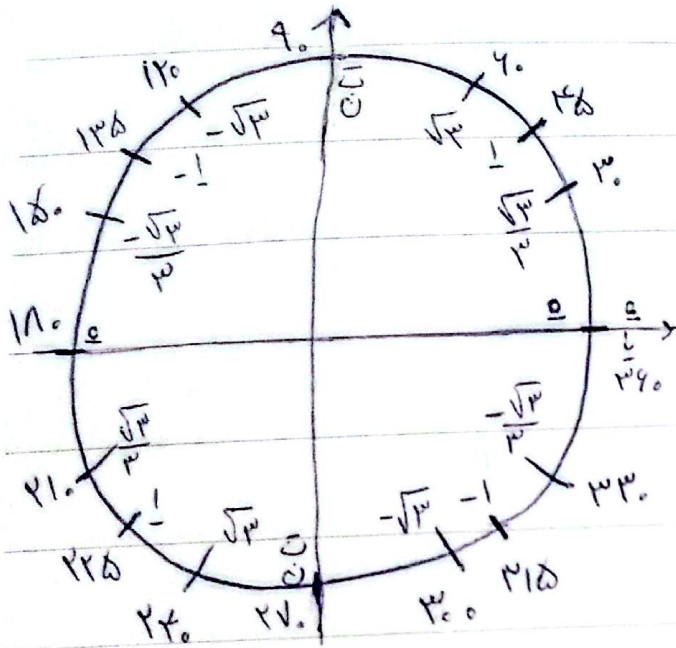




-1

الف) $\frac{1}{2} + (-1) + 2(-1) = -\frac{3}{2} + \frac{1}{2} = -1$

-2

ب) $\frac{\sqrt{3}}{2} + \left(-\sin \frac{\pi}{3}\right) = \frac{\sqrt{3}}{2} - \sin \frac{\pi}{3} = \frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{2} = 0$

ج) $-\frac{\sqrt{3}}{2} + 2\left(\frac{\sqrt{3}}{2}\right) - 2\left(-\frac{\sqrt{3}}{2}\right) = \frac{\sqrt{3}}{2}$

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

$\Rightarrow x = a \Rightarrow a^2 + 4a, 2a + a + 2, 3a + 2 \Rightarrow a^2 + a - 2, (a+2)(a-1)$

$\Rightarrow a = \frac{2}{1} \text{ و } \frac{1}{2} \Rightarrow a = 1 \rightarrow f(1) = 1^2 + 4(1) = 5$

عقبات: ۱، ۲

$\begin{cases} |x+1| \geq 2 \Rightarrow x+1 \geq 2 \Rightarrow x \geq 1 \\ x+1 \leq -2 \Rightarrow x \leq -3 \end{cases} \Rightarrow x \in (-\infty, -3] \cup [1, +\infty)$

-4

$\frac{|x+3|}{x+3} \Rightarrow x+3 \Rightarrow 1-b, a-4 \rightarrow a+b, 2x$

مطلوبه: ۱، ۲، ۳، ۴

$$a) y = \frac{1}{x^2 - 4x^2} = \frac{1}{x^2(x-4)} \rightarrow x^2(x-4) \neq 0 \rightarrow x \neq 0, 4 \rightarrow D_f = \mathbb{R} - \{0, 4\}$$

$$b) y = \frac{1}{x^2 + 4x^2 + 4x + 4} = \frac{1}{x(x^2 + 4x + 4) + 4} = \frac{1}{x(x+2)^2 + 4} \Rightarrow \underbrace{x(x+2)^2}_{\oplus} \neq -4$$

$$\Rightarrow x \neq -2 \Rightarrow D_f = \mathbb{R} - \{-2\}$$

$$a) y = \sqrt{x^2 - 1} + \sqrt{x - 2} \rightarrow x^2 - 1 = (x+1)(x-1) \geq 0 \rightarrow \frac{-1}{+} \frac{1}{-} \rightarrow (-\infty, -1] \cup [1, +\infty) \quad \text{و}$$

$$x - 2 \geq 0 \rightarrow x \geq 2 \rightarrow [2, +\infty)$$

$$\cap \rightarrow [2, +\infty) = D_f$$

$$b) y = \frac{\sqrt{9 - 3x}}{\sqrt{4x - 3}} \rightarrow \begin{cases} 9 - 3x \geq 0 \rightarrow 9 \geq 3x \rightarrow x \leq 3 \\ 4x - 3 \geq 0 \rightarrow 4x \geq 3 \rightarrow x \geq \frac{3}{4} \end{cases} \cap \rightarrow \left(\frac{3}{4}, 3\right] = D_f$$

$$\Rightarrow 9x - a \geq 0 \rightarrow a \leq 9x \Rightarrow x \geq \frac{a}{9}, b - 3x \geq 0 \rightarrow 3x \leq b \rightarrow x \leq \frac{b}{3}$$

$$\cap \rightarrow \frac{a}{9} \leq x \leq \frac{b}{3} \xRightarrow{D_f = \{x\}} \frac{a}{9} \leq 1 \rightarrow a \leq 9, \frac{b}{3} \leq 1 \rightarrow b \leq 3 \rightarrow \frac{b}{a} \leq \frac{1}{\frac{a}{9}} = \frac{9}{a}$$

$$\text{ا) } y = \sqrt{\frac{x^2 - x - 4}{x^2 - 13x^2 + 34}} = \sqrt{\frac{(x-3)(x+1)}{(x^2-9)(x^2-4)}} = \sqrt{\frac{(x-3)(x+1)}{(x-3)(x+3)(x-2)(x+2)}}$$

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

$\begin{array}{ccccccc} & -3 & & * & & & * \\ & \downarrow & & \downarrow & & & \downarrow \\ & \pm 3 & & -1 & & & \pm 1 \end{array}$

$$\Rightarrow D_f = (-\infty, -3) \cup (1, 3) \cup (3, +\infty) = \mathbb{R} - \left([-3, 1] \cup \{3\} \right)$$

$$\text{ب) } y = \sqrt{\frac{x^2 - 2x^2 - 5x + 4}{x^2 + 2x^2 - 5x - 4}} = \sqrt{\frac{(x-1)(x^2 - x - 4)}{(x+1)(x^2 + x - 4)}} = \sqrt{\frac{(x-1)(x-3)(x+1)}{(x+1)(x+3)(x-2)}}$$

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

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

$$\text{ج) } y = \sqrt{2[x] - 4} \rightarrow 2[x] - 4 \geq 0 \rightarrow 2[x] \geq 4 \rightarrow [x] \geq 2$$

$$\Rightarrow x \geq 2 \Rightarrow D_f = [2, +\infty)$$

$$\text{د) } y = \sqrt{2[x] - 5} \rightarrow 2[x] - 5 \geq 0 \rightarrow 2[x] \geq 5 \rightarrow [x] \geq 2.5 \Rightarrow x \geq 3$$

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

$$\text{هـ) } y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+4}}$$

$$\rightarrow \frac{x+1}{|x-3|} \geq 0 \Rightarrow x \geq -1, x \neq 3$$

$$\rightarrow \frac{4-x}{x^2+2x+4} \geq 0 \Rightarrow x \leq 4$$

$$\Delta = b^2 - 4ac = 4 - 4(1)(4) = -12 \Rightarrow \Delta < 0 \Rightarrow \text{شعبتين حقيقيتين}$$

$$\Rightarrow D_f = [-1, 4] - \{3\}$$

شعبتين حقيقيتين

Subject:

Date:

Sa Su Mo Tu We

$$b) y = \sqrt{[x] - 4} + \sqrt{4 - [x]}$$

$$\rightarrow [x] - 4 \geq 0 \rightarrow [x] \geq 4 \rightarrow x \geq 4$$

$$\rightarrow 4 - [x] \geq 0 \rightarrow [x] \leq 4 \rightarrow x \leq 4$$

$$\cap \rightarrow \emptyset = D_f$$