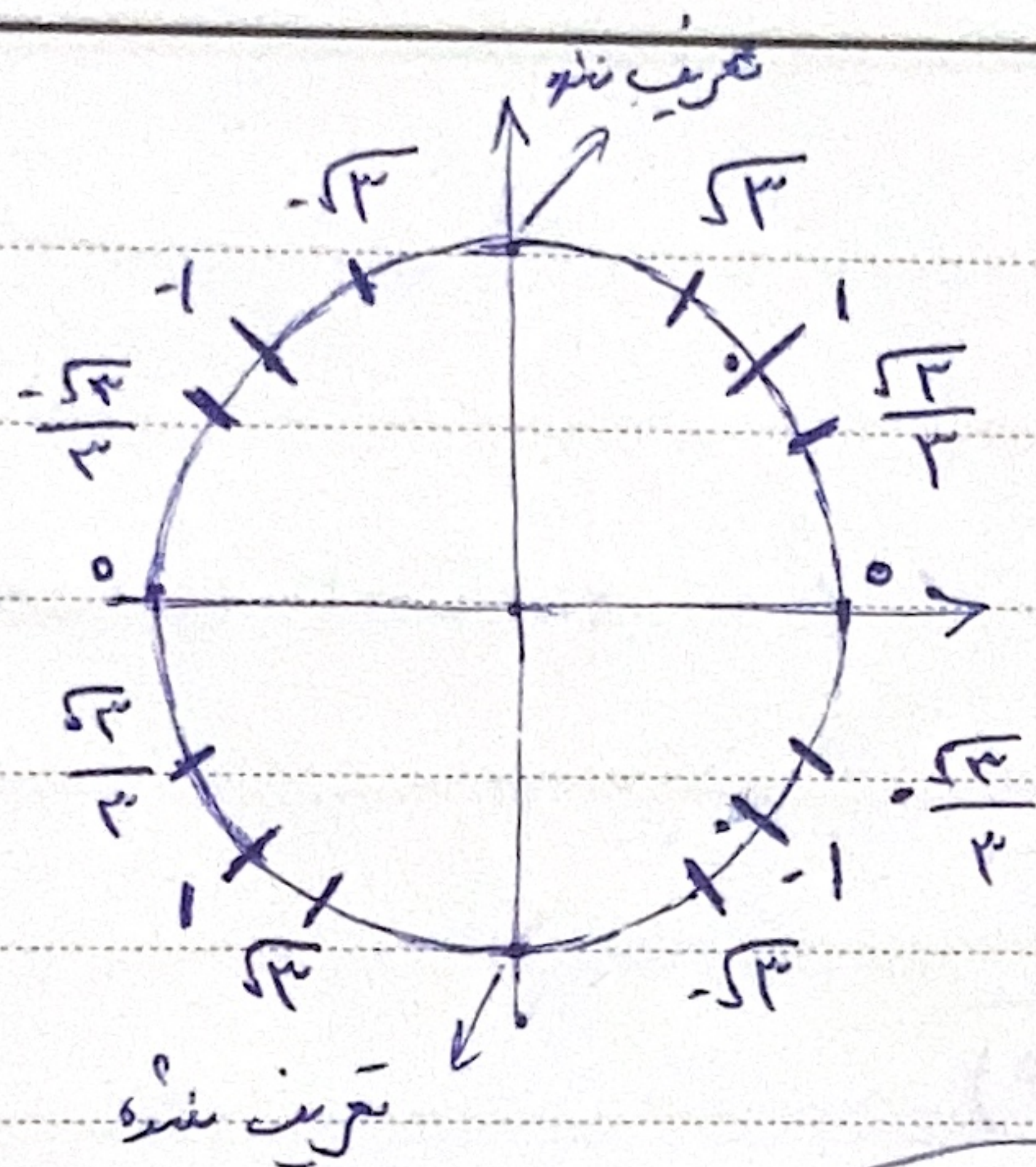




۱- نمایش زوایای روی دایره مشخص شده.

الف) $A = \frac{1}{2} - 1 + 2(-1) = -\frac{5}{2}$

ب) $B = (-\frac{\sqrt{3}}{2}) + \frac{\sqrt{3}}{2} - 2(-\frac{\sqrt{3}}{2}) = \frac{3\sqrt{3}}{2}$

ج) $C = \frac{\sqrt{3}}{2} + \frac{3\sqrt{3}}{2} - 2(-\frac{\sqrt{3}}{2}) = \frac{5\sqrt{3}}{2}$

د) $D = \cos 0 + \sin \frac{\pi}{2} = 1 + 1 = 2$

$x = a \Rightarrow a^2 + 4a = 3a + 2 \Rightarrow a^2 + a - 2 = 0 \Rightarrow a = 1, -2$

$f(x) = 1 + (4 \times 1) = 5$

چون $a > 0$ است $\leftarrow a = 1$

$f(x) = \begin{cases} 2x^2 + b & x \leq -3, x \geq 1 \\ 2x + a & -3 \leq x \leq -1 \end{cases}$

$x = -3 \Rightarrow 18 - b = -9 + a \Rightarrow a + b = 27$

الف) $x^3 - 4x^2 = x^2(x - 4) \neq 0 \Rightarrow x \neq 4, 0 \Rightarrow D_f \subset \mathbb{R} - \{0, 4\}$

ب) $2x^3 + 4x^2, 2x + 4 = (x^2 + 1)(2x + 4) \neq 0 \Rightarrow x \neq -2 \Rightarrow D_f \subset \mathbb{R} - \{-2\}$

الف) $x^2 - 1 \geq 0 \Rightarrow x^2 \geq 1 \Rightarrow x \geq 1 \vee x \leq -1, x - 2 \geq 0 \Rightarrow x \geq 2$

$(x \geq 1) \cap (x \leq -1) \cap (x \geq 2) \Rightarrow D_f = [2, +\infty)$

ب) $9 - 3x \geq 0 \Rightarrow x \leq 3, 4x - 3 \geq 0 \Rightarrow x \geq \frac{3}{4} \Rightarrow \frac{3}{4} \leq x \leq 3$

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

$$x \leq b \wedge x \geq a \Rightarrow x \leq \frac{b}{c} \wedge x \geq \frac{a}{c} \quad -v$$

$$\frac{b}{c} \geq \frac{a}{c} \Rightarrow \frac{b}{a} \geq \frac{1}{c} \quad \text{چون کسر مثبت است}$$

$$\text{الف)} \quad y = \sqrt{\frac{(x-2)(x+2)}{(x^2)^2 - 12x^2 + 4}} = \sqrt{\frac{(x-2)(x+2)}{(x^2-4)(x^2-4)}} \quad -\wedge$$

$$\begin{array}{ccccccc} & & * & & * & & \\ -2 & -2 & 2 & 2 & & & \\ + & - & - & + & + & & \end{array} \Rightarrow D_f = (-\infty, -2) \cup (2, 2) \cup (2, +\infty)$$

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

$$\begin{array}{ccccccc} -2 & -2 & -1 & 1 & 2 & 2 & \\ + & - & + & - & + & - & + \end{array} \Rightarrow D_f = (-\infty, -2) \cup [-2, -1) \cup [1, 2) \cup [2, +\infty)$$

$$\text{الف)} \quad x[x] - 4 \geq 0 \Rightarrow [x] \geq 2 \Rightarrow x \geq 2 \Rightarrow D_f = [2, +\infty) \quad -9$$

$$\text{ب)} \quad x[x] - 8 \geq 0 \Rightarrow [x] \geq 2, 0 \Rightarrow x \geq 2 \Rightarrow D_f = [2, +\infty)$$

$$\text{الف)} \quad y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{6-x}{x^2+2x+4}} \Rightarrow x \geq -1 - \{3\} \Rightarrow x \leq 4 \quad \begin{array}{c} * \\ -1 \quad 3 \\ -1 + 3 \end{array}$$

$$\Delta = (3)^2 - 4(4 \times 1) = -1 < 0 \Rightarrow \text{همواره مثبت} \Rightarrow \text{دایره منفی}$$

$$D_f = [-1, 3) \cup (3, 4]$$

$$\text{ب)} \quad y = \sqrt{[x]-4} + \sqrt{2-[x]} \Rightarrow [x] \geq 4 \Rightarrow x \geq 4$$

$$2-[x] \geq 0 \Rightarrow 2 \geq [x] \Rightarrow x < 3 \quad (-\infty, 3) \cap [4, +\infty) = \emptyset$$

$$D_f = \emptyset$$