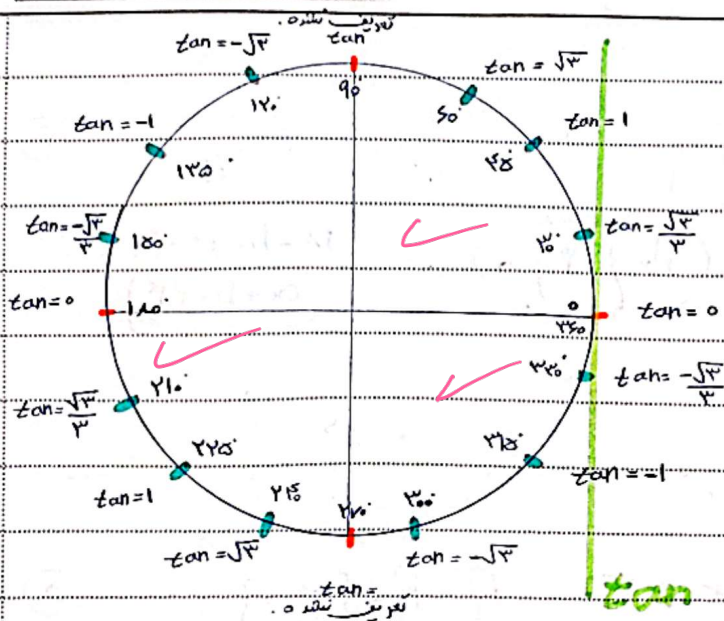




الف) $\frac{1}{\sqrt{3}} + (-1) + 2(-1) = \frac{-5}{\sqrt{3}}$

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

ج) $-\frac{\sqrt{3}}{2} + 3(\frac{\sqrt{3}}{2}) - 2(-\frac{\sqrt{3}}{2}) = \frac{4\sqrt{3}}{2}$

د) $\cos 0 + \sin(\pi \cdot \frac{1}{\sqrt{3}}) = \pi \times \cos \frac{\pi}{\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{2\sqrt{3}}{3} \times \pi = 2130^\circ \rightarrow 90^\circ \text{ دور و } 130^\circ$
 $\sin \pi = 0 \Rightarrow 0: \sin(\frac{\pi}{\sqrt{3}}) = \sin(90^\circ) = 1$

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$\cos 0 + \sin 90 = 1 + 1 = 2$

ا) $\alpha^2 + 4\alpha = 3\alpha + 2 \rightarrow \alpha^2 + \alpha - 2 = 0 \rightarrow \alpha = 1, -2$

ب) $\alpha = 1 \checkmark \Rightarrow f(1) = 1 + 4 = 5$
 $\alpha = -2$

شروط $|x+1| \geq 2 \rightarrow \left. \begin{array}{l} x \geq 1 \\ x \leq -3 \end{array} \right\} \Rightarrow \text{المجموعة } \{-3\} \Rightarrow \begin{array}{l} 1x - b = a - 6 \\ \boxed{a + b = 216} \end{array}$ (4)

شروط $-3 \leq x \leq -1$

الف) $x^3 - 4x^2 \neq 0 \rightarrow \left\{ \begin{array}{l} x \neq 4 \\ x \neq 0 \end{array} \right. \quad D = R - \{4, 0\}$ (5)

ب) $2x^3 + 3x^2 + 2x + 4 \neq 0 \rightarrow x \neq -2 \quad D = R - \{-2\}$ (6)

$2(x+2)(x^2+1) \neq 0$
 $\cdot \text{ليس له جذور}$

الف) $\sqrt{x^2-1} \rightarrow x^2-1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow \left\{ \begin{array}{l} x \geq 1 \\ x \leq -1 \end{array} \right. \quad \text{I}$ (7)

$\sqrt{x-2} \rightarrow x-2 \geq 0 \rightarrow x \geq 2 \quad \text{II} \Rightarrow \text{I} \cap \text{II} \Rightarrow D = [2, +\infty)$

ب) $5-3x \geq 0 \rightarrow x \leq \frac{5}{3} \quad \text{I}$
 $5x-3 \geq 0 \rightarrow x \geq \frac{3}{5} \quad \text{II} \Rightarrow \text{I} \cap \text{II} \Rightarrow D = \left[\frac{3}{5}, \frac{5}{3}\right]$ (8)

$12-a=0 \rightarrow a=12$
 $\{2\} \subset \text{المجموعة} = 0 \rightarrow \Rightarrow \frac{b}{a} = \frac{6}{12} = \frac{1}{2}$
 $b-6=0 \rightarrow b=6$ (9)

الف) $\frac{(x-3)(x+2)}{(x^2-9)(x^2-4)} \geq 0$ (1)

توان x بود ---

Sign chart: $+ \quad - \quad + \quad - \quad +$ at points $-3, -2, 2, 3$.

$D_f = (-\infty, -3] \cup [2, 4) \cup (9, +\infty)$

1, 20

پایین صندلی بود

ب) $\frac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)} \geq 0$

Sign chart: $+ \quad - \quad + \quad - \quad + \quad - \quad +$ at points $-3, -2, -1, 1, 2, 3$.

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

(9)

الف) $2[x] - 4 \geq 0 \rightarrow [x] \geq 2 \rightarrow D_f = [2, +\infty)$

ب) $2[x] - 8 \geq 0 \rightarrow 2[x] \geq 8 \rightarrow [x] \geq 4 \rightarrow D_f = [4, +\infty)$

الف) $\frac{x+1}{(x-2)} \geq 0$ (10)

Sign chart: $- \quad +$ at points $-1, 2$.

$D_f = [-1, +\infty) - \{2\}$ I

$\frac{5-x}{x^2+2x+4} \geq 0$ (11)

Sign chart: $+ \quad -$ at points $-1, 4$.

$D_f = (-\infty, 5] \cap II$

$D_f = [-1, 5] - \{2\}$

ب) $[x] - 4 \geq 0 \rightarrow [x] \geq 4 \rightarrow x \geq 4$ I

$2 - [x] \geq 0 \rightarrow [x] \leq 2 \rightarrow x < 3$ II

$D_f = \emptyset$

الف- ٨)

$$y = \sqrt{\frac{n^2 - n - 4}{n^4 - 13n^2 + 34}} \leadsto \frac{n^2 - n - 4}{n^4 - 13n^2 + 34} \geq 0 \leadsto \frac{(n-4)(n+1)}{(n^2-9)(n^2-4)} \geq 0$$

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

	-3	-2*	1	3*	
+		-		-	
+		-		+	
	+		+		+

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