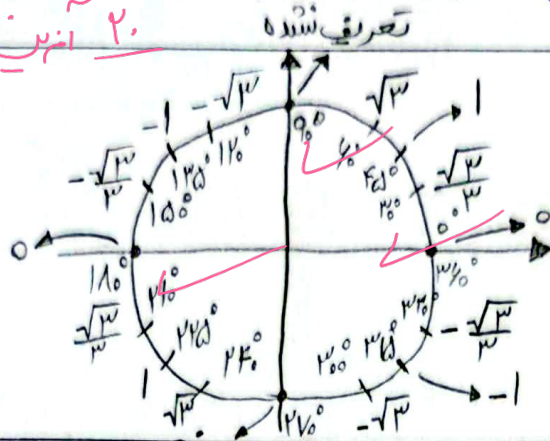




الف) $\frac{1}{4} - 1 + 2(-1) = -\frac{5}{4}$

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

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

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

if $x=a \rightarrow a^2 + 4a = 2a + a + 2 \Rightarrow a^2 + a - 2 = 0 \rightarrow \begin{cases} a=1 \checkmark \\ a=-2 \text{ غلط} \end{cases}$

$f(1) = (1)^2 + 4(1) = 5$

$|x+1| \geq 2 \rightarrow x+1 \geq 2 \Rightarrow x \geq 1$

$x+1 \leq -2 \Rightarrow x \leq -3$

if $x=-3 \Rightarrow 2x^2 - b = a + 2x \Rightarrow 18 - b = a - 4 \Rightarrow a+b = 22$

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

ب) $x^3 + 2x^2 + x + 2 \neq 0 \rightarrow (x+2)(x^2+1) \neq 0 \rightarrow D_f = \mathbb{R} - \{-2\}$
 (Note: $x^2+1 \neq 0$ is always true, so $x \neq -2$)

الف) 1) $x^2 - 1 \geq 0 \rightarrow \frac{-1}{+} \frac{1}{-} \rightarrow (-\infty, -1] \cup [1, +\infty)$

2) $x - 2 \geq 0 \rightarrow x \geq 2 \rightarrow 1 \cap 2 \Rightarrow D_f = [2, +\infty)$

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ب) 1) $4 - 3x \geq 0 \Rightarrow x \leq \frac{4}{3}$
 2) $4x - 3 > 0 \Rightarrow x > \frac{3}{4}$ } $\Rightarrow D_f = (\frac{3}{4}, \frac{4}{3}]$

1) $4x - a \geq 0 \Rightarrow x \geq \frac{a}{4}$
 2) $b - 3x \geq 0 \Rightarrow x \leq \frac{b}{3}$ } $\Rightarrow \text{if } x = \frac{a}{4} = \frac{b}{3} \Rightarrow \frac{b}{a} = \frac{1}{4}$

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الف) $\sqrt{\frac{(x-3)(x+2)}{(x^2-4)(x^2-9)}} \Rightarrow \frac{-3 - 2^*}{+ \frac{1}{-} \frac{1}{-} \frac{1}{-} \frac{1}{+}} \Rightarrow D_f = (-\infty, -2) \cup (2, 3) \cup (3, +\infty)$

ب) $\sqrt{\frac{(x-1)(x-3)(x+2)}{(x+1)(x-2)(x+3)}} \Rightarrow \frac{-3 - 2 - 1}{+ \frac{1}{-} \frac{1}{-} \frac{1}{-} \frac{1}{+}} \Rightarrow D_f = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$

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

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ب) $2[x] - 5 \geq 0 \Rightarrow [x] \geq \frac{5}{2} \Rightarrow D_f = [3, +\infty)$

الف) 1) $\frac{x+1}{|x-3|} \geq 0 \rightarrow \frac{-1}{-} \frac{1}{+} \rightarrow [-1, 3) \cup (3, +\infty)$
 2) $\frac{4-x}{x^2+2x+4} \geq 0 \rightarrow 4-x \geq 0 \rightarrow (-\infty, 4]$
 $\Delta < 0 \rightarrow +$ صواره
 $1 \cap 2 \Rightarrow D_f = [-1, 3) \cup (3, 4]$

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ب) 1) $[x] - 4 \geq 0 \rightarrow [x] \geq 4 \Rightarrow x \geq 4$
 2) $4 - [x] \geq 0 \rightarrow [x] \leq 4 \Rightarrow x < 5$ } $1 \cap 2 \Rightarrow D_f = \emptyset$