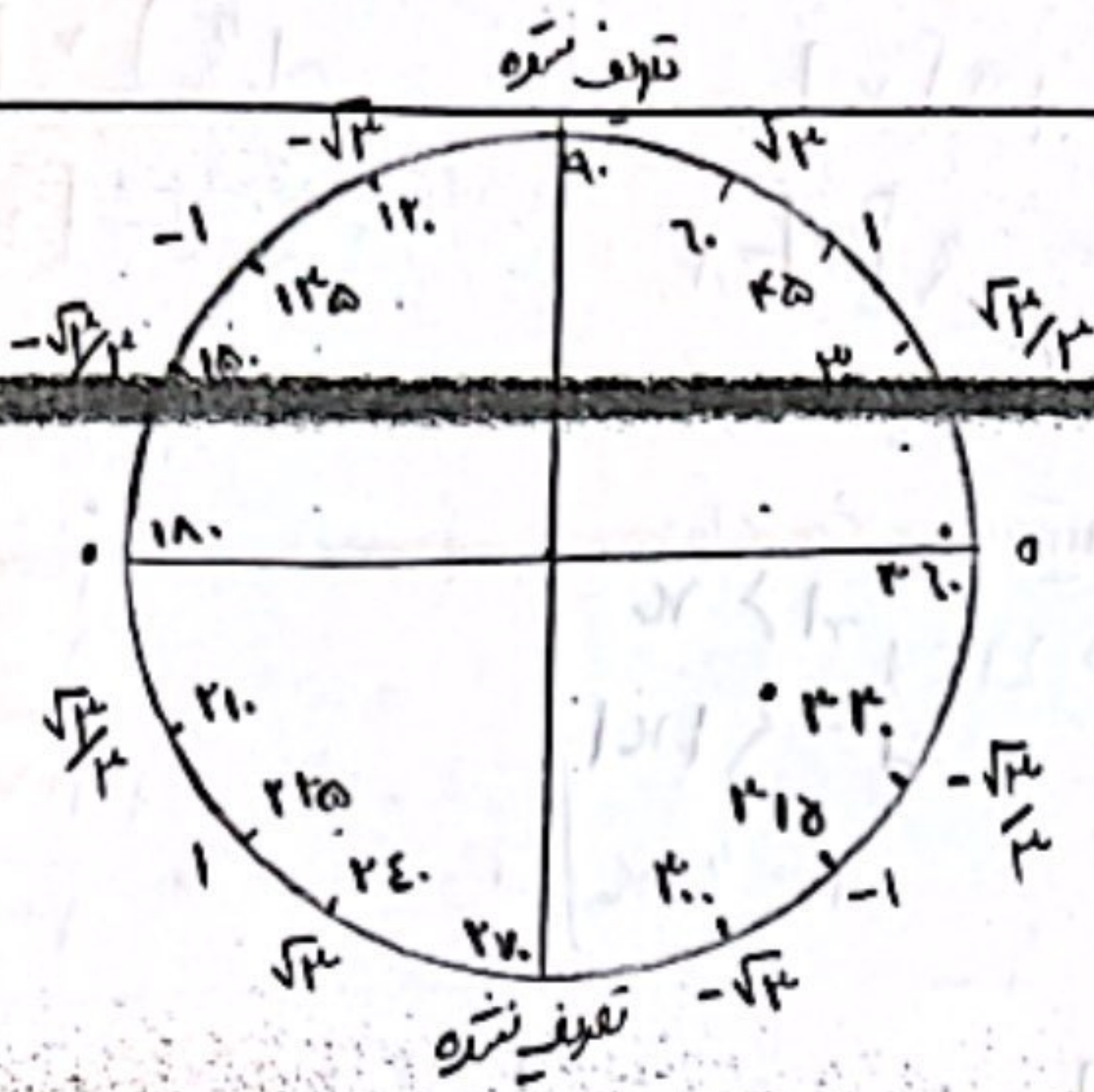




الف) $\sin 15^\circ + \cos 15^\circ + 2 \tan 15^\circ = \frac{1}{2} - 1 + 2 = -\frac{1}{2}$

ب) $-\cos 15^\circ + \sin 15^\circ - 2 \sin 15^\circ = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} + \frac{2\sqrt{2}}{2} = \frac{5\sqrt{2}}{2}$

ج) $\cot 15^\circ + 2 \cot 15^\circ - 2 \tan 15^\circ = -\frac{\sqrt{3}}{2} + \frac{2\sqrt{3}}{2} + \frac{2\sqrt{3}}{2} = \frac{4\sqrt{3}}{2}$

د) $\cos(\sin 15^\circ) + \sin(\pi \cos 15^\circ) = \cos 0^\circ + \sin(\pi) = 1 + 1 = 2$

$x=a \rightarrow a^2 + 2a = 2a + a + 2$

$a^2 + a - 2 = 0$

$(a+2)(a-1) = 0 \rightarrow \begin{cases} a = -2 \\ a = +1 \end{cases}$ فقط

$\Rightarrow f(1) = (1)^2 + 2(1) = 1 + 2 = 3$

$|x+1| \geq 2 \rightarrow \begin{cases} x+1 \geq 2 \rightarrow x \geq 1 \\ x+1 \leq -2 \rightarrow x \leq -3 \end{cases}$

$x=-3 \rightarrow 2(-3)^2 - b = a + 2(-3)$

$18 - b = a - 6$

$a + b = 24$

الف) $x^3 - 4x^2 \neq 0$

$x^2(x-4) \neq 0 \rightarrow \begin{cases} x \neq 0 \\ x \neq 4 \end{cases} \Rightarrow D_f = \mathbb{R} - \{0, 4\}$

ب) $2x^3 + 4x^2 + 2x + 4 \neq 0$

$x^3 + 2x^2 + x + 2 \neq 0$

$x(x^2 + 2x + 1) \neq -2$

$x(x+1)^2 \neq -2 \rightarrow x \neq -2 \Rightarrow D_f = \mathbb{R} - \{-2\}$

الف) $x^2 - 1 > 0$
 $x^2 > 1 \rightarrow x > 1$
 $x < -1$

$x - 2 > 0$
 $x > 2 \rightarrow D_f = [2, +\infty)$

ب) $7 - 3x > 0$
 $3x < 7$
 $x < \frac{7}{3}$

$7x - 1 > 0$
 $7x > 1$
 $x > \frac{1}{7}$

$\rightarrow D_f = (\frac{1}{7}, \frac{7}{3}]$

$4x - a > 0 \rightarrow 4x > a \rightarrow x > \frac{a}{4}$

$b - 1^x > 0 \rightarrow b > 1^x \rightarrow x < \frac{b}{1^x}$

$\rightarrow \frac{a}{4} = \frac{b}{1^x} \Rightarrow \frac{b}{a} = \frac{1}{1^x}$

الف) $y = \frac{(x-3)(x-2)}{(x^2-9)(x^2-4)} > 0 \rightarrow \frac{(x-3)(x+2)}{(x-3)(x+3)(x-2)(x+2)} > 0$

$\frac{-3^* \quad -2^* \quad 2 \quad 3^*}{+\quad - \quad - \quad +}$

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

ب) $\frac{x^2 - 1x^2 - 5x + 7}{x^2 - x^2} \quad \frac{x-1}{x^2 - x - 7} \quad \frac{x^2 + 1x^2 - 5x - 7}{x^2 + x^2} \quad \frac{x+1}{x^2 + x - 7}$
 $y = \frac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)} > 0$
 $\frac{-3^* \quad -2^* \quad 1 \quad 3^*}{+\quad - \quad - \quad +} \rightarrow (-\infty, -3) \cup (-2, -1) \cup [1, 2) \cup (3, +\infty)$

الف) $f(x) - 4 > 0$

$f(x) > 4$

$[x] > 4 \rightarrow D_f = [4, +\infty)$

ب) $f(x) - 5 > 0$

$[x] > \frac{5}{f} \rightarrow x > [5] \rightarrow D_f = [5, +\infty)$

الف) $\frac{x+1}{|x+3|} > 0 \rightarrow x > -1$

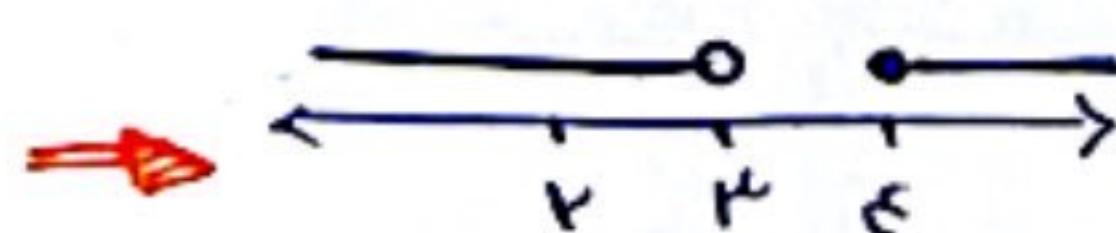
$\frac{7-x}{x^2 + 1x + 8} > 0 \rightarrow \frac{(7-x)}{x} > 0$

$\Delta = 1 - 17 < 0$
 المستقيمات لا تقاطع
 المستقيمات لا تقاطع
 $x = -3$ هو نقطة التقاطع

$\rightarrow D_f = [-1, 7] - \{-3\}$

ب) $[x] - 4 > 0$
 $[x] > 4$

$f - [x] > 0$
 $[x] < f$



$D_f = \emptyset$