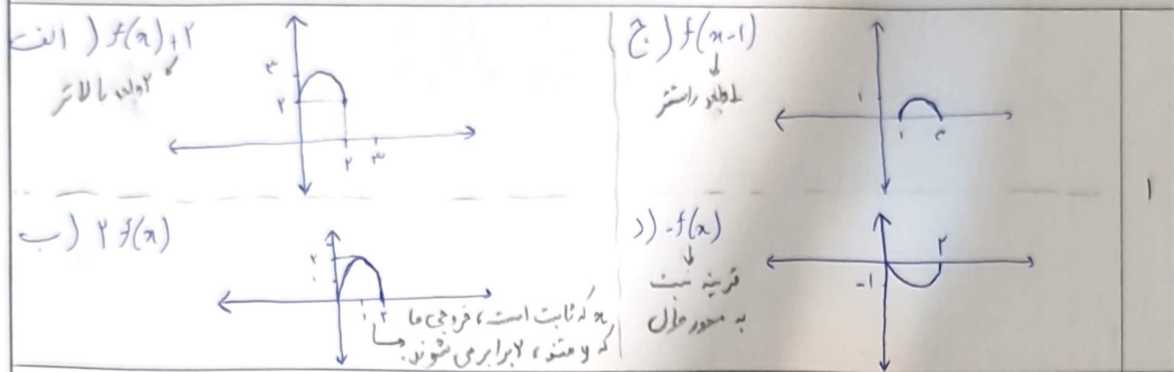




الف) $x^2 - 5x + 4 > 0 \rightarrow (x-4)(x-1) \rightarrow \left| \begin{array}{ccc} + & - & + \\ 1 & 4 & 1 \end{array} \right| \Rightarrow (-\infty, 1) \cup (4, +\infty)$

ب) $x^2 - 4x + 5 < 0 \rightarrow (x-2)(x-1) \rightarrow \left| \begin{array}{ccc} + & - & + \\ 1 & 2 & 1 \end{array} \right| \Rightarrow (1, 2)$

ج) $x^2 + 4x + 5 \geq 0 \rightarrow (x+1)(x+5) \rightarrow \left| \begin{array}{ccc} + & - & + \\ -5 & -1 & 1 \end{array} \right| \Rightarrow (-\infty, -5] \cup [-1, +\infty)$

د) $x^2 - 7x + 4 \leq 0 \rightarrow (x-4)(x-1) \rightarrow \left| \begin{array}{ccc} + & - & + \\ 1 & 4 & 1 \end{array} \right| \Rightarrow [1, 4]$

الف) $\frac{x^2 - 3x + 2}{x - 5} < 0$

ب) $\frac{x^2 - 1}{x^2 - 4x + 5} \geq 0$

الف) $\frac{x^2 - 1}{x^2 - x} \geq 0$

ب) $\frac{x^2 - 14}{x^2 - 5x + 4} \geq 0$

الف) $\sqrt{2-x} \geq 0 \Rightarrow 2-x \geq 0 \Rightarrow x \leq 2$

ب) $\sqrt{2-x} \geq 0 \Rightarrow 2-x \geq 0 \Rightarrow x \leq 2$

$$\text{ا) } \sqrt{4-x^2} \rightarrow 4-x^2 \geq 0 \Rightarrow x^2 \leq 4 \Rightarrow x \geq -2, x \leq 2 \Rightarrow D_f = [-2, 2]$$

$$D_f = [-2, 2]$$

$$\text{ب) } \sqrt{3|x|-2} \rightarrow 3|x|-2 \geq 0 \Rightarrow 3|x| \geq 2 \Rightarrow |x| \geq \frac{2}{3} \Rightarrow x \geq \frac{2}{3}, x \leq -\frac{2}{3}$$

$$D_f = (-\infty, -\frac{2}{3}] \cup [\frac{2}{3}, +\infty)$$

$$\text{ا) } \frac{|x+1|}{|x|-2} \rightarrow |x|-2 \neq 0 \Rightarrow |x| \neq 2 \Rightarrow x \neq \pm 2 \quad D_f = \mathbb{R} - \{\pm 2\}$$

$$\text{ب) } \frac{\sqrt{x+1}}{(\sqrt{x})^2-2} \rightarrow \sqrt{x}-2 \neq 0 \Rightarrow \sqrt{x} \neq 2 \Rightarrow x \neq 4 \quad D_f = [0, +\infty) - \{4\}$$

$\rightarrow x \geq 0$

$$\text{ا) } \frac{\sin x}{\cos x - 1} \rightarrow \cos x - 1 \neq 0 \Rightarrow \cos x \neq 1 \Rightarrow x \neq 0, 2\pi, \dots \Rightarrow D_f = \mathbb{R} - \{2k\pi, 2k\pi + 2\pi\}$$

$$\text{ب) } \frac{\cos x + 1}{\sin x + 1} \rightarrow \sin x + 1 \neq 0 \Rightarrow \sin x \neq -1 \Rightarrow x \neq \frac{3\pi}{2}, \dots \Rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{3\pi}{2}, 2k\pi - \frac{\pi}{2}\}$$

$\cos x \neq \sin x$

$$\text{ج) } \frac{\tan x + 1}{\cot x - 1} \rightarrow \cot x - 1 \neq 0 \Rightarrow \frac{\cos x}{\sin x} \neq 1 \Rightarrow x \neq 0, \pi, 2\pi, \dots \Rightarrow D_f = \mathbb{R} - \{k\pi, k\pi + \pi\}$$

$\cot x \neq 1$

$$\text{د) } \frac{\sin x + 1}{\sin^2 x - 2} \rightarrow \sin^2 x - 2 \neq 0 \Rightarrow \sin^2 x \neq 2 \Rightarrow \sin x \neq \pm \sqrt{2} \Rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2}\}$$

$$y = \frac{1}{\sqrt{2|x-2|-\frac{1}{2}}} \rightarrow 2|x-2| - \frac{1}{2} > 0 \Rightarrow 2|x-2| > \frac{1}{2} \Rightarrow |x-2| > \frac{1}{4}$$

$$D_f = x > \frac{9}{4}, x < \frac{7}{4} \quad D_f = (-\infty, \frac{7}{4}) \cup (\frac{9}{4}, +\infty)$$

$x-2 > \frac{1}{4} \Rightarrow x > \frac{9}{4}$
 $x-2 < -\frac{1}{4} \Rightarrow x < \frac{7}{4}$

$$\text{ا) } y = \sqrt{4-2|x|} \Rightarrow 4-2|x| \geq 0 \Rightarrow 2 \geq |x| \Rightarrow |x| \leq 2 \Rightarrow x \geq -2, x \leq 2 \Rightarrow D_f = [-2, 2]$$

$$\text{ب) } y = \sqrt{\frac{|x|}{|x|}} \Rightarrow \frac{|x|}{|x|} \geq 0 \Rightarrow \begin{matrix} \oplus \rightarrow + \\ \ominus \rightarrow 0 \\ \omin� \rightarrow + \end{matrix} \Rightarrow D_f = \mathbb{R} - \{0\}$$

$|x| \neq 0 \Rightarrow x \neq 0$