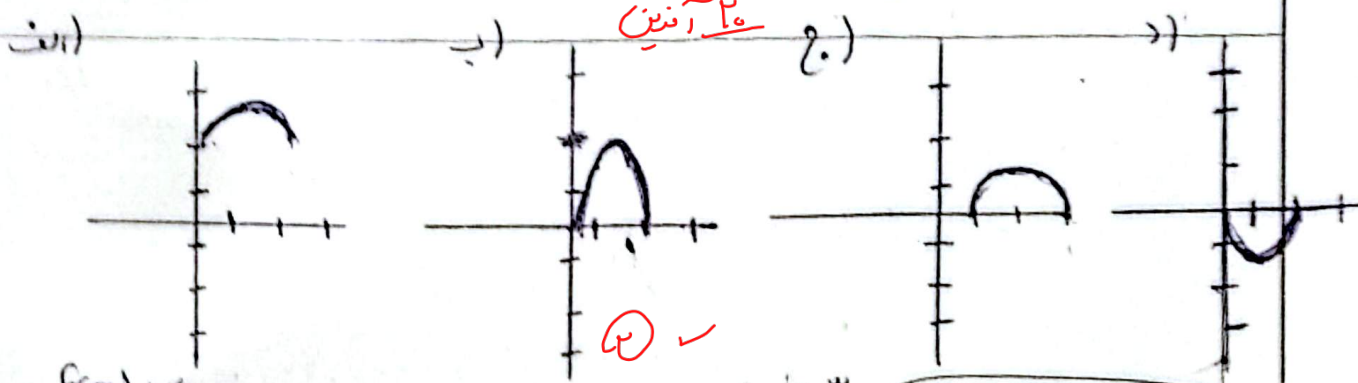




الف) $x^2 - 5x + 2 > 0 \Rightarrow (x-2)(x-1) > 0 \Rightarrow x < 1 \text{ or } x > 2 \Rightarrow (-\infty, 1) \cup (2, \infty)$

ب) $x^2 - 4x + 5 < 0 \Rightarrow (x-1)(x-5) < 0 \Rightarrow 1 < x < 5 \Rightarrow (1, 5)$

ج) $x^2 + 4x + 5 > 0 \Rightarrow (x+5)(x+1) > 0 \Rightarrow x < -5 \text{ or } x > -1 \Rightarrow (-\infty, -5] \cup [-1, \infty)$

د) $x^2 - 7x + 4 < 0 \Rightarrow (x-4)(x-1) < 0 \Rightarrow 1 < x < 4 \Rightarrow (1, 4)$

الف) $\frac{x^2 - 3x + 2}{x-5} < 0 \Rightarrow \frac{(x-2)(x-1)}{x-5} < 0 \Rightarrow (-\infty, 1) \cup (2, 5)$

ب) $\frac{x^2 - 1}{x^2 - 4x + 5} \geq 0 \Rightarrow \frac{(x-1)(x+1)}{(x-5)(x-1)} \geq 0 \Rightarrow \frac{x+1}{x-5} \geq 0 \Rightarrow (-\infty, -1] \cup (5, \infty)$

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

ب) $\sqrt{\frac{x^2 - 14}{x^2 - 5x + 4}} \geq 0 \Rightarrow \frac{(x+4)(x-4)}{(x-4)(x-1)} \geq 0 \Rightarrow \frac{x+4}{x-1} \geq 0 \Rightarrow (-\infty, -4] \cup (1, \infty)$

الف) $\sqrt{4-x} \geq 0 \Rightarrow x \leq 4$ and $\sqrt{4-x} \geq 0 \Rightarrow x \geq -4 \Rightarrow [-4, 4]$

ب) $\sqrt{3-\sqrt{x-2}} \geq 0 \Rightarrow 3-\sqrt{x-2} \geq 0 \Rightarrow \sqrt{x-2} \leq 3 \Rightarrow x-2 \leq 9 \Rightarrow x \leq 11 \Rightarrow [2, 11]$

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

$[-\sqrt{2}, \sqrt{2}]$

(C) ✓

ب) $\sqrt{3|x|-9} \quad 3|x|-9 \geq 0 \quad 3|x| \geq 9 \quad |x| \geq 3 \quad x \geq 3 \text{ or } x \leq -3$

$(-\infty, -3] \cup [3, +\infty)$

الف) $\sqrt{\frac{|x|+1}{|x|-3}}$ $|x|-3 \neq 0 \quad |x| \neq 3$ $D = \mathbb{R} - \{-3, 3\}$

ب) $\sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\sqrt{x}-3 \neq 0 \quad \sqrt{x} \neq 3 \quad x \neq 9$ $D = [0, 9) \cup (9, +\infty)$

الف) $\frac{\sin x}{\cos x - 1} \Rightarrow \cos x \neq 1 \Rightarrow x \neq 2k\pi$ $D = \mathbb{R} - \{2k\pi\}$

ب) $\frac{\cos x + 1}{\sin x + 1} \Rightarrow \sin x \neq -1 \Rightarrow x \neq -\frac{\pi}{2} + 2k\pi$ $D = \mathbb{R} - \{-\frac{\pi}{2} + 2k\pi\}$

ج) $\frac{\tan x + 1}{\cot x - 1} \Rightarrow \tan x \neq 1 \Rightarrow x \neq \frac{\pi}{4} + k\pi$ $D = \mathbb{R} - \{\frac{\pi}{4} + k\pi\}$

د) $\frac{\sin x + 1}{\sin^2 x - 3} \Rightarrow \sin^2 x \neq 3 \Rightarrow \sin x \neq \pm \sqrt{3}$ $D = \mathbb{R}$

هـ) $\frac{1}{\sqrt{|x-1|-\frac{1}{2}}} \Rightarrow |x-1|-\frac{1}{2} > 0 \Rightarrow |x-1| > \frac{1}{2} \Rightarrow x > \frac{3}{2} \text{ or } x < \frac{1}{2}$

$D = (-\infty, \frac{1}{2}) \cup (\frac{3}{2}, +\infty)$

(C) ✓

الف) $\sqrt{x-2|x|} \Rightarrow x-2|x| \geq 0 \Rightarrow x \leq 2$ $D = [-2, 2]$

ب) $\sqrt{\frac{|x|}{|x|}} \Rightarrow |x| \neq 0 \Rightarrow x \neq 0$ $D = \mathbb{R} - \{0\}$

(C) ✓