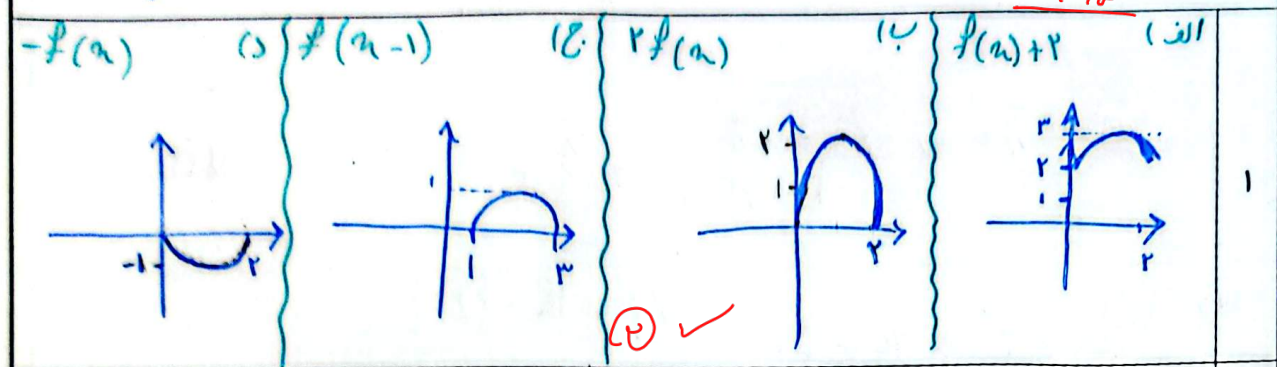




الف) $x^2 - 5x + 4 > 0 \rightarrow (x-1)(x-4) > 0 \rightarrow \frac{1}{+} \frac{4}{-} \rightarrow (-\infty, 1) \cup (4, +\infty)$
 ب) $x^2 - 4x + 5 < 0 \rightarrow (x-1)(x-5) < 0 \rightarrow \frac{1}{+} \frac{5}{-} \rightarrow (1, 5)$
 ج) $x^2 + 4x + 5 \geq 0 \rightarrow (x+1)(x+5) \geq 0 \rightarrow \frac{-5}{+} \frac{-1}{-} \rightarrow (-\infty, -5] \cup [-1, +\infty)$
 د) $x^2 - 5x + 4 \leq 0 \rightarrow (x-1)(x-4) \leq 0 \rightarrow \frac{1}{+} \frac{4}{-} \rightarrow [1, 4]$

الف) $\frac{x^2 - 3x + 2}{x - 5} < 0 \rightarrow \frac{(x-1)(x-2)}{x-5} < 0 \rightarrow \frac{1}{-} \frac{2}{+} \frac{5}{-} \rightarrow (-\infty, 1) \cup (2, 5)$
 ب) $\frac{x^2 - 1}{x^2 - 4x + 5} \geq 0 \rightarrow \frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0 \rightarrow \frac{-1}{+} \frac{1}{-} \frac{5}{-} \rightarrow (-\infty, -1] \cup (5, +\infty)$

الف) $\frac{x^3 - 1}{x^2 - x} \geq 0 \rightarrow \frac{(x-1)(x^2 + x + 1)}{x(x-1)} \geq 0 \rightarrow \frac{-1}{+} \frac{0}{-} \frac{1}{+} \rightarrow D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $\frac{x^2 - 14}{x^2 - 5x + 6} \geq 0 \rightarrow \frac{(x+4)(x-4)}{(x-1)(x-6)} \geq 0 \rightarrow \frac{-4}{+} \frac{1}{-} \frac{6}{+} \rightarrow D_f = (-\infty, -4) \cup (1, 6) \cup (6, +\infty)$

الف) $y = \sqrt{4-x} - \sqrt{2-x}$
 $2-x \geq 0 \rightarrow x \leq 2$
 $4-x \geq 0 \rightarrow x \leq 4$
 $4-x \geq 2-x \rightarrow 4-x \leq 14 \rightarrow x \geq -10$
 $D_f = -10 \leq x \leq 2$

ب) $3 - \sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11$
 $\sqrt{x-2} \geq 0 \rightarrow x-2 \geq 0 \rightarrow x \geq 2$
 $D_f = 2 \leq x \leq 11$

$x \geq 2$

ا) $\varepsilon - r x \geq 0 \rightarrow r x \leq \varepsilon \rightarrow x \leq \frac{\varepsilon}{r}$ $x \leq \pm \sqrt{\varepsilon}$ $D_f = -\sqrt{\varepsilon} \leq x \leq \sqrt{\varepsilon}$ ب) $r x - 9 \geq 0 \rightarrow \begin{cases} x \geq \frac{9}{r} \\ x \geq 3 \end{cases} \rightarrow \begin{cases} x \geq 3 \\ x \leq -3 \end{cases}$ $D_f = (-\infty, -3) \cup (3, +\infty)$	6
ا) $x - 3 \neq 0$ $x \neq 3 \rightarrow x \neq \pm 3$ $D_f = \mathbb{R} - \{\pm 3\}$ ب) $\sqrt{x} \rightarrow x \geq 0$ (✓) ✓ $\sqrt{x} - 3 \neq 0$ $\sqrt{x} \neq 3 \rightarrow x \neq 9$ $D_f = [0, +\infty) - \{9\}$	7
ا) $2 \cos x - 1 \neq 0$ $\cos x \neq \frac{1}{2} \xrightarrow{D_f} \mathbb{R} - \left\{ \frac{\pi}{3}, \frac{5\pi}{3} \right\}$ (✓) ✓ ب) $2 \sin x + 1 \neq 0 \rightarrow \sin x \neq -\frac{1}{2} \rightarrow D_f = \mathbb{R} - \left\{ \frac{7\pi}{6}, \frac{11\pi}{6} \right\}$ ج) $\cos x \neq 0 \rightarrow x \neq \frac{\pi}{2}, \frac{3\pi}{2}$ $\sin x \neq 0 \rightarrow x \neq 0, \pi$ $\cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \rightarrow x \neq \frac{\pi}{4}, \frac{5\pi}{4}$ $D_f = \mathbb{R} - \left\{ \frac{\pi}{2}, \frac{3\pi}{2}, 0, \pi, \frac{\pi}{4}, \frac{5\pi}{4} \right\}$ د) $2 \sin^2 x - 3 \neq 0 \rightarrow \sin^2 x \neq \frac{3}{2} \rightarrow \sin x \neq \pm \sqrt{\frac{3}{2}} \rightarrow D_f = \mathbb{R} - \left\{ \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4} \right\}$	8
$2 x-2 - \frac{1}{\varepsilon} > 0$ $x-2 > \frac{1}{2\varepsilon} \Rightarrow \begin{cases} x-2 > \frac{1}{2\varepsilon} \rightarrow x > \frac{1}{\varepsilon} \\ x-2 < -\frac{1}{2\varepsilon} \rightarrow x < \frac{1}{\varepsilon} \end{cases}$ $D_f = (-\infty, \frac{1}{\varepsilon}) \cup (\frac{1}{\varepsilon}, +\infty)$ (✓) ✓	9
ا) $\varepsilon - 2 x \geq 0 \rightarrow x \leq \frac{\varepsilon}{2} \rightarrow \begin{cases} x \leq \frac{\varepsilon}{2} \\ x \geq -\frac{\varepsilon}{2} \end{cases} \rightarrow D_f = -\frac{\varepsilon}{2} \leq x \leq \frac{\varepsilon}{2}$ ب) $\frac{ x }{ x } \geq 0 \rightarrow x \neq 0 \rightarrow x \neq 0$ $D_f = \mathbb{R} - \{0\}$	10