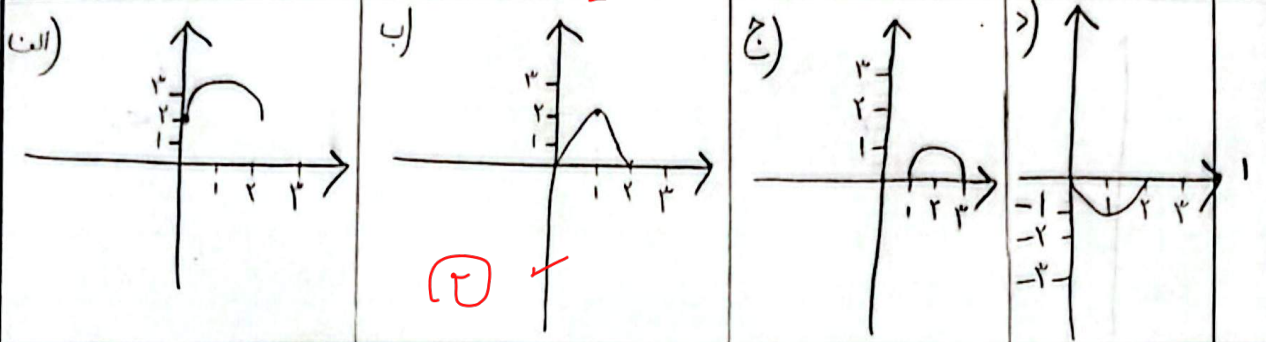


۲۰ آفرین



الف) $(x-2)(x-3) > 0$
 $x=2 \leftarrow$ $x=3 \rightarrow$
 $\begin{array}{c} 2 \quad 3 \\ + \quad - \quad + \end{array}$
 $(-\infty, 2) \cup (3, +\infty)$

ب) $(x-1)(x-5) < 0$
 $x=1 \leftarrow$ $x=5 \rightarrow$
 $\begin{array}{c} 1 \quad 5 \\ + \quad - \quad + \end{array}$
 $(1, 5)$

ج) $(x+1)(x+5) \geq 0$
 $x=-1 \leftarrow$ $x=-5 \rightarrow$
 $\begin{array}{c} -1 \quad -5 \\ + \quad - \quad + \end{array}$
 $(-\infty, -5] \cup [-1, +\infty)$

د) $(x-1)(x-4) \leq 0$
 $x=1 \leftarrow$ $x=4 \rightarrow$
 $\begin{array}{c} 1 \quad 4 \\ + \quad - \quad + \end{array}$
 $[1, 4]$

الف) $\frac{(x-1)(x-2)}{x-5} < 0$
 $x=1$ $x=2$ $x=5$
 $\begin{array}{c} 1 \quad 2 \quad 5 \\ - \quad + \quad - \quad + \end{array} \Rightarrow (-\infty, 1) \cup (2, 5)$

ب) $\frac{(x+1)(x-1)}{(x-1)(x-5)} \geq 0$
 $x=1$ $x=-1$ $x=5$
 $\begin{array}{c} -1 \quad 1 \quad 5 \\ + \quad - \quad - \quad + \end{array} \Rightarrow (-\infty, -1] \cup (5, +\infty)$

الف) $x^3 - 1 \geq 0$ $x^3 - 1 = 0$ $x=1$
 $x^3 - x \geq 0 \rightarrow x(x^2 - 1) \rightarrow x=1$ $x=-1$
 $x=0$
 $\begin{array}{c} -1 \quad 0 \quad 1 \\ + \quad - \quad + \end{array} \Rightarrow D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $(x+4)(x-4) \geq 0$ $x=4$ $x=-4$
 $(x-1)(x-4) \geq 0$ $x=1$ $x=4$
 $\begin{array}{c} -4 \quad 1 \quad 4 \\ + \quad - \quad + \end{array} \Rightarrow D_f = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$

الف) $2-x \geq 0 \rightarrow x \leq 2$
 $4 - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 2$
 $\rightarrow 2-x \leq 4 \rightarrow x \geq -2$
 $D_f = [-2, 2]$

ب) $x-2 \geq 0 \rightarrow x \geq 2$
 $4 - \sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 2$
 $\rightarrow x-2 \leq 4 \rightarrow x \leq 6$
 $D_f = [2, 6]$

ا) $1 - x^2 \geq 0 \rightarrow x^2 \leq 1$ $\rightarrow x^2 \leq 1 \rightarrow -\sqrt{1} \leq x \leq \sqrt{1}$ $D_f = [-1, 1]$	ب) $3 x - 9 \geq 0 \rightarrow x \geq 3$ $\rightarrow x \geq 3 \rightarrow -3 \leq x \leq 3$ $D_f = [3, +\infty) \cup (-\infty, -3]$	6
ا) $ x - 3 \neq 0 \quad x \neq 3$ $\rightarrow x = \pm 3$ $D_f = \mathbb{R} - \{\pm 3\}$	ب) $x \geq 0$ $\sqrt{x} - 3 \neq 0 \rightarrow \sqrt{x} \neq 3$ $\rightarrow x \neq 9$ $D_f = [0, 9) \cup (9, +\infty)$	7
ا) $1 - \cos x \neq 0$ $\cos x \neq 1$ $D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{2}\}$	ب) $1 - \sin x \neq 0$ $\sin x \neq 1$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2}\}$	8
ا) $1 - \cos x \neq 0$ $\cos x \neq 1$ $D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{2}\}$	ب) $1 - \sin x \neq 0$ $\sin x \neq 1$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2}\}$	9
ا) $1 - 2 x \geq 0 \rightarrow x \leq 2$ $\rightarrow x \leq 2 \rightarrow x \leq 2$ $x \geq -2$ $D_f = [-2, 2]$	ب) $ x \neq 0 \rightarrow x \neq 0$ $\frac{ x }{ x } \geq 0 \checkmark$ $D_f = \mathbb{R} - \{0\}$	10