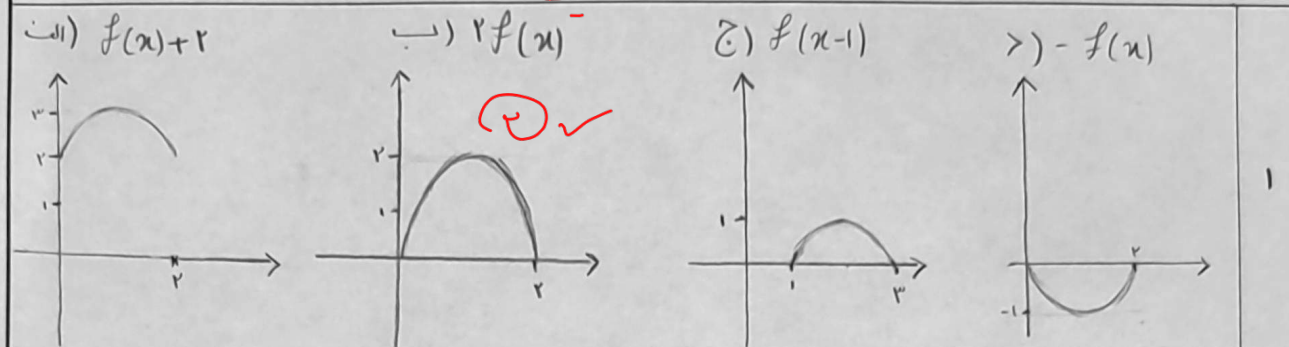


۲- آزمون



الف) $x^2 - 5x + 4 > 0$: $x^2 - 5x + 4 = (x-2)(x-3) \rightarrow$ ریشه ها $= 2, 3$ $\frac{2}{+} \frac{3}{-}$
 $\Rightarrow$ بازه $= (-\infty, 2) \cup (3, +\infty)$

ب) $x^2 - 4x + 5 < 0$: $x^2 - 4x + 5 = (x-1)(x-5) \rightarrow$ ریشه ها $= 1, 5$ $\frac{1}{+} \frac{5}{-}$
 $\Rightarrow$ بازه $= (1, 5)$

ج) $x^2 + 4x + 5 \geq 0$: $x^2 + 4x + 5 = (x+1)(x+5) \rightarrow$ ریشه ها $= -1, -5$ $\frac{-1}{+} \frac{-5}{-}$
 $\Rightarrow$ بازه $= (-\infty, -5] \cup [-1, +\infty)$

د) $x^2 - 7x + 4 \leq 0$: $x^2 - 7x + 4 = (x-4)(x-1) \rightarrow$ ریشه ها $= 4, 1$ $\frac{1}{+} \frac{4}{-}$
 $\Rightarrow$ بازه $= [1, 4]$

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

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

الف) $y = \sqrt{\frac{x^2 - 1}{x^2 - x}} \Rightarrow x^2 - x \neq 0 \rightarrow x(x-1) \neq 0$, $\frac{x^2 - 1}{x^2 - x} \geq 0$ $\frac{-1}{+} \frac{0}{-} \frac{1}{+}$
 $x \neq 0, x \neq 1 \rightarrow x \neq \pm 1$
 $\Rightarrow Df = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

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

الف) $y = \sqrt{4 - \sqrt{2-x}} \Rightarrow 4 - \sqrt{2-x} \geq 0 \Rightarrow \sqrt{2-x} \leq 4 \Rightarrow 2-x \leq 16$
 $x \geq -14$
 $2-x \geq 0 \rightarrow x \leq 2 \Rightarrow x \leq 2 \wedge x \geq -14 \Rightarrow Df = [-14, 2]$

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

الف) $y = \sqrt{4-x^2} \Rightarrow 4-x^2 \geq 0 \Rightarrow -x^2 \geq -4 \Rightarrow x^2 \leq 4 \Rightarrow x \leq 2 \Rightarrow -2 \leq x \leq 2$ $\Rightarrow Df = [-2, 2]$	٢ ✓	٤
ب) $y = \sqrt{3 x-9 } \Rightarrow 3 x-9 \geq 0 \Rightarrow x-9 \geq 0 \Rightarrow x \geq 9 \Rightarrow x \leq -9, x \geq 9$ $\Rightarrow Df = (-\infty, -9] \cup [9, +\infty)$		٦
الف) $y = \sqrt{\frac{ x +1}{ x -3}}$ $\Rightarrow x -3 \neq 0 \Rightarrow x \neq 3 \Rightarrow x \neq \pm 3 \Rightarrow Df = \mathbb{R} - (-3, 3)$	٢ ✓	٧
ب) $y = \sqrt{\frac{\sqrt{x+1}}{\sqrt{x}-3}}$ $\Rightarrow x \geq 0, \sqrt{x}-3 \neq 0 \Rightarrow \sqrt{x} \neq 3 \Rightarrow x \neq 9 \Rightarrow Df = [0, 9) \cup (9, +\infty)$		٧
الف) $2\cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{2} \Rightarrow x \neq 2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3} \Rightarrow Df = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$ ب) $2\sin x + 1 \neq 0 \Rightarrow \sin x \neq -\frac{1}{2} \Rightarrow x \neq 2k\pi - \frac{\pi}{6}, 2k\pi + \pi + \frac{\pi}{6} \Rightarrow Df = \mathbb{R} - \{2k\pi - \frac{\pi}{6}, 2k\pi + \pi + \frac{\pi}{6}\}$		٨
ج) $\cos x \neq 0, \sin x \neq 0, \cot x - 1 \neq 0 \Rightarrow \frac{\cos x}{\sin x} \neq 1 \Rightarrow$ يعني Sin Cos برابر نباشند $\Rightarrow Df = \mathbb{R} - \{k\pi \cup k\pi + \frac{\pi}{2} \cup k\pi + \frac{\pi}{4}\}$ د) $4\sin^2 x - 3 \neq 0 \Rightarrow \sin^2 x \neq \frac{3}{4} \Rightarrow \sin x \neq \pm \frac{\sqrt{3}}{2} \Rightarrow Df = \mathbb{R} - \{k\pi \pm \frac{\pi}{3}\}$	٢ ✓	٨
$y = \frac{1}{\sqrt{2 x-1 -\frac{1}{2}}}$ $\Rightarrow \sqrt{2 x-1 -\frac{1}{2}} \neq 0$ $2 x-1 -\frac{1}{2} \geq 0 \Rightarrow 2 x-1 > \frac{1}{2} \Rightarrow x-1 > \frac{1}{4}$ $ x-1 > \frac{1}{4} \Rightarrow x-1 < -\frac{1}{4}, x-1 > \frac{1}{4} \Rightarrow x < \frac{3}{4}, x > \frac{5}{4}$ $\Rightarrow Df = (-\infty, \frac{3}{4}) \cup (\frac{5}{4}, +\infty)$	٢ ✓	٩
الف) $4-2 x \geq 0 \Rightarrow 2 x \leq 4 \Rightarrow x \leq 2 \Rightarrow -2 \leq x \leq 2 \Rightarrow Df = [-2, 2]$ ب) $ x \neq 0 \Rightarrow x \neq 0 \Rightarrow Df = \mathbb{R} - \{0\}$	٢ ✓	١٠
$\frac{ x }{ x } \geq 0 \Rightarrow$ همیشه برقرار است چون که قدر مطلق همیشه یا منفی یا مثبت یا صفر است		