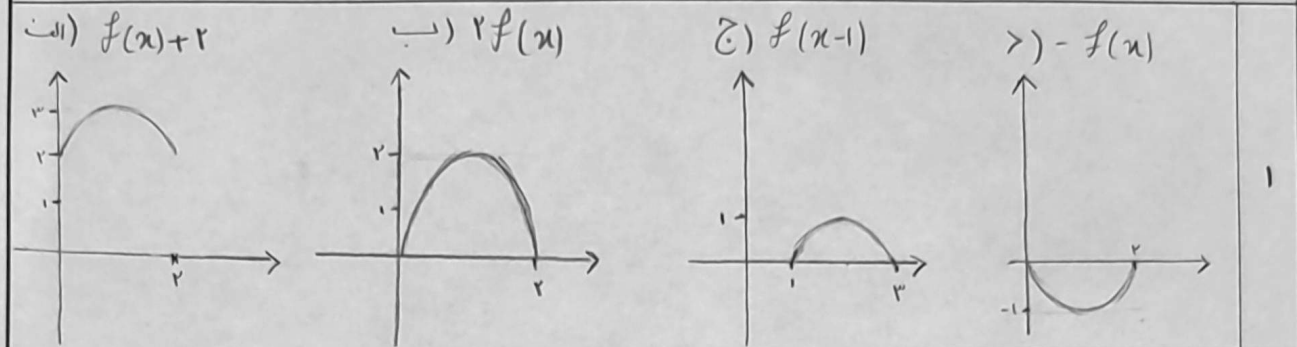




الف)  $x^2 - 5x + 4 > 0$  :  $x^2 - 5x + 4 = (x-2)(x-3) \rightarrow$  ریشه ها = 2, 3  $\frac{2}{+} \frac{3}{-}$   
 $\Rightarrow$  بازه:  $(-\infty, 2) \cup (3, +\infty)$

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) $y = \sqrt{4-2x^2} \Rightarrow 4-2x^2 \geq 0 \Rightarrow -2x^2 \geq -4 \Rightarrow 2x^2 \leq 4 \Rightarrow x^2 \leq 2 \Rightarrow -\sqrt{2} \leq x \leq \sqrt{2}$<br>$\Rightarrow Df = [-\sqrt{2}, \sqrt{2}]$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ٦  |
| ب) $y = \sqrt{3 x -9} \Rightarrow 3 x -9 \geq 0 \Rightarrow 3 x  \geq 9 \Rightarrow  x  \geq 3 \Rightarrow x \leq -3, x \geq 3$<br>$\Rightarrow Df = (-\infty, -3] \cup [3, +\infty)$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ٧  |
| الف) $y = \sqrt{\frac{ x +1}{ x -3}} \Rightarrow  x -3 \neq 0 \Rightarrow  x  \neq 3 \Rightarrow x \neq \pm 3 \Rightarrow Df = \mathbb{R} - \{3, -3\}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ٨  |
| ب) $y = \sqrt{\frac{\sqrt{x+1}}{\sqrt{x}-3}} \Rightarrow x \geq 0, \sqrt{x}-3 \neq 0 \Rightarrow \sqrt{x} \neq 3 \Rightarrow x \neq 9 \Rightarrow Df = [0, 9) \cup (9, +\infty)$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ٩  |
| الف) $2\cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{2} \Rightarrow x \neq 2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3} \Rightarrow Df = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$<br>ب) $2\sin x + 1 \neq 0 \Rightarrow \sin x \neq -\frac{1}{2} \Rightarrow x \neq 2k\pi - \frac{\pi}{6}, 2k\pi + \pi + \frac{\pi}{6} \Rightarrow Df = \mathbb{R} - \{2k\pi - \frac{\pi}{6}, 2k\pi + \pi + \frac{\pi}{6}\}$<br>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<br>$\Rightarrow Df = \mathbb{R} - \{k\pi \cup k\pi + \frac{\pi}{2} \cup k\pi + \frac{\pi}{4}\}$<br>د) $4\sin^2 x - 3 \neq 0 \Rightarrow \sin^2 x \neq \frac{3}{4} \Rightarrow \sin x \neq \pm \frac{\sqrt{3}}{2} \Rightarrow Df = \mathbb{R} - \{k\pi \pm \frac{\pi}{3}\}$ | ١٠ |
| $y = \frac{1}{\sqrt{2 x-1 -\frac{1}{2}}} \Rightarrow \sqrt{2 x-1 -\frac{1}{2}} \neq 0$<br>$2 x-1 -\frac{1}{2} \geq 0 \Rightarrow 2 x-1 -\frac{1}{2} > 0 \Rightarrow 2 x-1  > \frac{1}{2} \Rightarrow$<br>$ 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}$<br>$\Rightarrow Df = (-\infty, \frac{3}{4}) \cup (\frac{5}{4}, +\infty)$                                                                                                                                                                                                                                                                                                                                                                                                                               | ١١ |
| الف) $4-2 x  \geq 0 \Rightarrow 2 x  \leq 4 \Rightarrow  x  \leq 2 \Rightarrow -2 \leq x \leq 2 \Rightarrow Df = [-2, 2]$<br>ب) $ x  \neq 0 \Rightarrow x \neq 0 \Rightarrow Df = \mathbb{R} - \{0\}$<br>$\frac{ x }{ x } \geq 0 \Rightarrow$ همیشه برقرار است<br>چون که قدر مطلق همیشه<br>مثبت یا صفر است<br>یا منفی یا صفر است                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ١٢ |