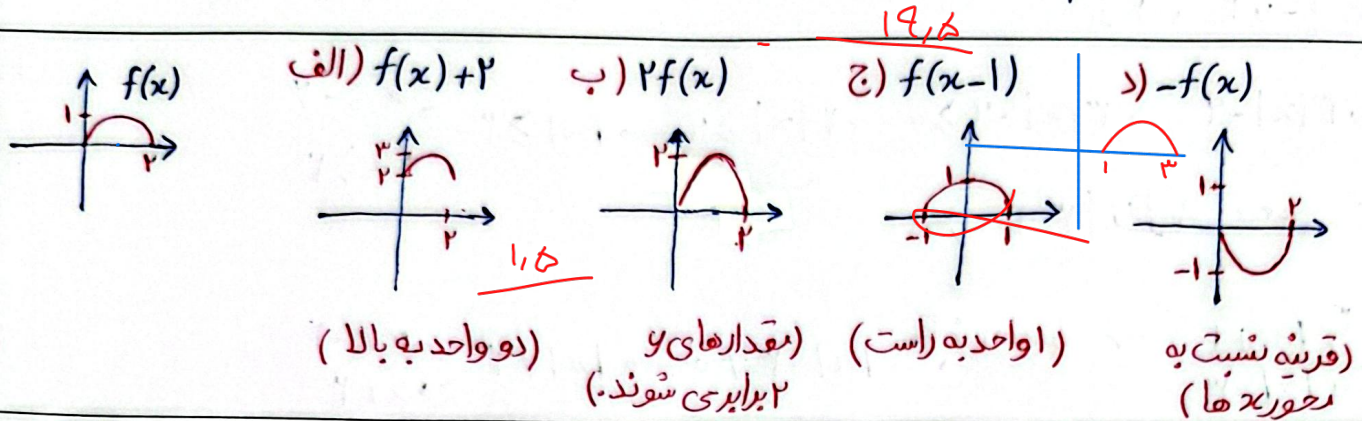




الف) $x^2 - 5x + 6 > 0 \rightarrow (x-2)(x-3) > 0$
 ریشه ها: ۲ ۳
 $\rightarrow (-\infty, 2) \cup (3, +\infty)$

ب) $x^2 - 6x + 5 < 0 \rightarrow (x-1)(x-5) < 0$
 ریشه ها: ۱ ۵
 $\rightarrow (1, 5)$

ج) $x^2 + 6x + 5 \geq 0 \rightarrow (x+1)(x+5) \geq 0$
 ریشه ها: -۱ -۵
 $\rightarrow (-\infty, -5] \cup [-1, +\infty)$

د) $x^2 - 7x + 6 \leq 0 \rightarrow (x-1)(x-6) \leq 0$
 ریشه ها: ۱ ۶
 $\rightarrow [1, 6]$

الف) $\frac{x^2 - 3x + 2}{x-5} < 0$
 $\rightarrow \frac{(x-1)(x-2)}{x-5}$
 ریشه ها: ۱ ۲ ۵
 $\rightarrow (-\infty, 1) \cup (2, 5)$

ب) $\frac{x^2 - 1}{x^2 - 6x + 5} \geq 0 \rightarrow \frac{(x-1)(x+1)}{(x-1)(x-5)}$
 ریشه ها: ۱ -۱ ۵
 $\rightarrow (-\infty, -1] \cup (5, +\infty)$

الف) $y = \sqrt{\frac{x^3 - 1}{x^3 - x}} \rightarrow \frac{x^3 - 1}{x(x^2 - 1)}$
 ریشه ها: -۱ ۱ ۱
 $D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $y = \sqrt{\frac{x^2 - 16}{x^2 - 5x + 4}} \rightarrow \frac{(x-4)(x+4)}{(x-1)(x-4)}$
 ریشه ها: -۴ ۱ ۴
 $D_f = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$

الف) $y = \sqrt{4 - \sqrt{2-x}}$
 $2-x \geq 0 \rightarrow x \leq 2$
 $4 - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow 2-x \leq 16 \rightarrow x \geq -14$
 $\rightarrow (x \geq -14) \cap (x \leq 2) = [-14, 2] \rightarrow D_f = [-14, 2]$

ب) $y = \sqrt{3 - \sqrt{x-2}}$
 $x-2 \geq 0 \rightarrow x \geq 2$
 $3 - \sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11$
 $\rightarrow (x \geq 2) \cap (x \leq 11) = [2, 11] \rightarrow D_f = [2, 11]$

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

ب) $y = \sqrt{3|x|-9} \rightarrow 3|x|-9 \geq 0 \rightarrow 3|x| \geq 9 \rightarrow |x| \geq 3 \rightarrow \begin{cases} x \leq -3 \\ x \geq 3 \end{cases}$
 $\rightarrow D_f = (-\infty -3] \cup [3 +\infty)$

الف) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}}$ فقط مغنی نباید صفر شود $|x|-3 \neq 0 \rightarrow |x| \neq 3 \rightarrow \begin{cases} x \neq -3 \\ x \neq 3 \end{cases}$

$\rightarrow D_f = \mathbb{R} - \{3, -3\}$

ب) $y = \sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\begin{cases} x \geq 0 \\ \sqrt{x}-3 \neq 0 \end{cases} \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9 \rightarrow D_f = [0 \ 9) \cup (9 +\infty)$

الف) $y = \frac{\sin x}{\cos x - 1} \rightarrow \cos x - 1 \neq 0 \rightarrow \cos x \neq 1 \rightarrow \cos x \neq \frac{1}{1}$

$\rightarrow D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$

ب) $y = \frac{\cos x + 1}{\sin x + 1} \rightarrow \sin x + 1 \neq 0 \rightarrow \sin x \neq -1 \rightarrow \sin x \neq -\frac{1}{1}$
 $\rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{3\pi}{2}, 2k\pi + \frac{11\pi}{2}\}$

ج) $y = \frac{\tan x + 2}{\cot x - 1} = \frac{\frac{\sin}{\cos} x + 2}{\frac{\cos}{\sin} x - 1} \rightarrow \begin{cases} \cos \neq 0 \\ \sin \neq 0 \end{cases} \rightarrow \cot x - 1 \neq 0 \rightarrow \cot x \neq 1$

د) $y = \frac{\sin x + 1}{\sin^2 x - 3} \rightarrow \sin^2 x - 3 \neq 0 \rightarrow \sin^2 x \neq 3$
 $\rightarrow D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2}\}$

$\rightarrow \sin^2 x \neq \frac{3}{1} \rightarrow \sin x \neq \pm \frac{\sqrt{3}}{1} \rightarrow D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{3}\}$

$y = \frac{1}{\sqrt{2|x-2|-\frac{1}{2}}} \rightarrow \begin{cases} 2|x-2| > \frac{1}{2} \rightarrow |x-2| > \frac{1}{4} \rightarrow \begin{cases} x-2 > \frac{1}{4} \rightarrow x > \frac{9}{4} \\ x-2 < -\frac{1}{4} \rightarrow x < \frac{7}{4} \end{cases} \\ 2|x+2| - \frac{1}{2} > 0 \end{cases}$
 $\rightarrow D_f = (-\infty \ \frac{7}{4}) \cup (\frac{9}{4} +\infty)$

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

ب) $y = \frac{\sqrt{|x|}}{|x|}$ فقط مغنی نباید صفر باشد $|x| \neq 0 \rightarrow x \neq 0$

$\rightarrow D_f = \mathbb{R} - \{0\} \subseteq D_f = (-\infty 0) \cup (0 +\infty)$