

الف) $f(x) + 2$	ب) $2f(x)$	ج) $f(x-1)$	د) $-f(x)$	1
الف) $x^2 - 5x + 4 > 0$ $(x-2)(x-4) > 0$	ب) $x^2 - 4x + 4 < 0$ $(x-1)(x-4) < 0$	ج) $x^2 + x + 4 \geq 0$ $(x+1)(x+4) \geq 0$	د) $x^2 - 4x + 4 \leq 0$ $(x-1)(x-4) \leq 0$	2
x 2 4 y + - + $D_f = (-\infty, 2) \cup (4, \infty)$	x 1 4 y + - + $D_f = (1, 4)$	x -4 -1 y + - + $D_f = (-\infty, -4] \cup [-1, \infty)$	x 1 4 y + - + $D_f = [1, 4]$	
الف) $\frac{x^2 - 3x + 2}{x - 5} < 0$ $\frac{(x-1)(x-2)}{x-5} < 0$	ب) $\frac{x^2 - 1}{x^2 - 4x + 4} \geq 0$ $\frac{(x-1)(x+1)}{(x-1)(x-4)} \geq 0$	ج) $\frac{x^2 - 1}{x^2 - 4x + 4} \geq 0$ $\frac{(x-1)(x+1)}{(x-1)(x-4)} \geq 0$	د) $\frac{x^2 - 1}{x^2 - 4x + 4} \geq 0$ $\frac{(x-1)(x+1)}{(x-1)(x-4)} \geq 0$	3
x 1 2 5 y - + - + $D_f = (-\infty, 1) \cup (2, 5) \cup (5, \infty)$	x -1 1 4 y + - - + $D_f = (-\infty, -1] \cup (1, 4) \cup (4, \infty)$	x -1 1 4 y + - - + $D_f = (-\infty, -1] \cup (1, 4) \cup (4, \infty)$	x -1 1 4 y + - - + $D_f = (-\infty, -1] \cup (1, 4) \cup (4, \infty)$	
الف) $y = \sqrt{\frac{x^2 - 1}{x^2 - 4x + 4}}$ $* x^2 - 4x + 4 = (x-2)^2 \Rightarrow x \neq 2$ $* x^2 - 1 = (x-1)(x+1) \Rightarrow x \neq \pm 1$	ب) $y = \sqrt{\frac{x^2 - 1}{x^2 - 4x + 4}}$ $D_f = (-\infty, -1] \cup (1, 2) \cup (2, \infty)$ ① $x^2 - 1 > 0 \Rightarrow (x-1)(x+1) > 0 \Rightarrow x < -1 \text{ or } x > 1$ ② $x^2 - 4x + 4 > 0 \Rightarrow (x-2)^2 > 0 \Rightarrow x \neq 2$	ج) $y = \sqrt{\frac{x^2 - 1}{x^2 - 4x + 4}}$ $D_f = (-\infty, -1] \cup (1, 2) \cup (2, \infty)$ ① $x^2 - 1 > 0 \Rightarrow (x-1)(x+1) > 0 \Rightarrow x < -1 \text{ or } x > 1$ ② $x^2 - 4x + 4 > 0 \Rightarrow (x-2)^2 > 0 \Rightarrow x \neq 2$	د) $y = \sqrt{\frac{x^2 - 1}{x^2 - 4x + 4}}$ $D_f = (-\infty, -1] \cup (1, 2) \cup (2, \infty)$ ① $x^2 - 1 > 0 \Rightarrow (x-1)(x+1) > 0 \Rightarrow x < -1 \text{ or } x > 1$ ② $x^2 - 4x + 4 > 0 \Rightarrow (x-2)^2 > 0 \Rightarrow x \neq 2$	4
x -1 1 2 y + - + $D_f = (-\infty, -1) \cup (1, 2) \cup (2, \infty)$	x -1 1 2 y + - + $D_f = (-\infty, -1) \cup (1, 2) \cup (2, \infty)$	x -1 1 2 y + - + $D_f = (-\infty, -1) \cup (1, 2) \cup (2, \infty)$	x -1 1 2 y + - + $D_f = (-\infty, -1) \cup (1, 2) \cup (2, \infty)$	
الف) $y = \sqrt{2 - \sqrt{2x - 1}}$ $\frac{x \leq 2}{x \geq -1/2} \Rightarrow D_f = [-1/2, 2]$	ب) $y = \sqrt{2 - \sqrt{2x - 1}}$ $\frac{x \geq 2}{x \leq 11} \Rightarrow D_f = [2, 11]$	ج) $y = \sqrt{2 - \sqrt{2x - 1}}$ $\frac{x \geq 2}{x \leq 11} \Rightarrow D_f = [2, 11]$	د) $y = \sqrt{2 - \sqrt{2x - 1}}$ $\frac{x \geq 2}{x \leq 11} \Rightarrow D_f = [2, 11]$	5
x 2 y + - $D_f = (-\infty, 2]$	x 2 y + - $D_f = (-\infty, 2]$	x 2 y + - $D_f = (-\infty, 2]$	x 2 y + - $D_f = (-\infty, 2]$	

الف) $y = \sqrt{2-2x}$ $\Rightarrow 2 x = 2$ $\Rightarrow x = 1$ $\Rightarrow x = \pm 1$ $D_f = [-1, 2]$ (پ) ✓	ب) $y = \sqrt{3 x -9}$ $\Rightarrow 3 x = 9$ $\Rightarrow x = 3$ $\Rightarrow x = \pm 3$ $D_f = (-\infty, -3] \cup [3, +\infty)$	۶		
الف) $y = \sqrt{\frac{ x +1}{ x -3}}$ رادیكال با فرجه $\sqrt{\quad}$ محدودیت علامتی ندارد و در نتیجه جدول تعیین علامت نیاز نیست ... $x -3=0$ $\Rightarrow x =3$ $\Rightarrow x = \pm 3$ $D_f = \mathbb{R} - \{\pm 3\}$ ۱.۵	ب) $y = \sqrt{\frac{ x +1}{ x -3}}$ مانند سوال قبل به جدول تعیین $x -3=0$ $\Rightarrow x =3$ $\Rightarrow x = \pm 3$ علامت نیاز نداریم رادیكال با بی‌تعیین شدن $D_f = \mathbb{R} - \{9\}$ (د) ✓	۷		
الف) $y = \frac{\sin x}{2\cos x - 1}$ $2\cos x = 1$ $\cos x = \frac{1}{2}$ $D_f = \mathbb{R} - \{2k\pi - \frac{\pi}{3}, 2k\pi + \frac{\pi}{3}\}$	ب) $y = \frac{\cos x + 1}{2\sin x + 1}$ $2\sin x = -1$ $\sin x = -\frac{1}{2}$ $D_f = \mathbb{R} - \{2k\pi - \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}\}$	ج) $y = \frac{\tan x + 2}{\cot x - 1}$ $\cot x = 1$ $D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}\}$	د) $y = \frac{\sin x + 1}{2\sin^2 x - 3}$ $2\sin^2 x = 3$ $\sin^2 x = \frac{3}{2}$ $\sin x = \pm \sqrt{\frac{3}{2}}$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}\}$	۸
۹) $y = \frac{1}{\sqrt{2 x-1 -\frac{1}{2}}}$ $2 x-1 = \frac{1}{2}$ $x-1 = \frac{1}{4}$ $x-1 = \pm \frac{1}{4} \Rightarrow x = 1 \pm \frac{1}{4} \Rightarrow x = \frac{5}{4}, \frac{3}{4}$ (پ) ✓ $D_f = (-\infty, \frac{3}{4}) \cup (\frac{5}{4}, +\infty)$			۹	
الف) $y = \sqrt{4-2 x }$ $2 x = 4$ $x = 2$ $x = \pm 2$ $D_f = [-2, 2]$ (پ) ✓	ب) $y = \sqrt{\frac{1}{ x }} \Rightarrow$ هورا مثبت $D_f = \mathbb{R} - \{0\}$	۱۰		