

الف) $f(x)+2$	ب) $2 \neq f(x)$	ج) $f(x-1)$	د) $-f(x)$	۱
الف) $x^2-5x+6 > 0 \Rightarrow (x-2)(x-3) > 0$	$x^2-6x+5 < 0 \Rightarrow (x-1)(x-5) < 0$	$x^2+6x+5 > 0 \Rightarrow (x+1)(x+5) > 0$	$x^2-7x+6 < 0 \Rightarrow (x-1)(x-6) < 0$	۲
$x = (-\infty, 2) \cup (3, +\infty)$	$x = (1, 5)$	$x = (-\infty, -5] \cup [-1, +\infty)$	$x = [1, 6]$	
الف) $\frac{x^2-3x+2}{x-5} < 0 \Rightarrow \frac{(x-1)(x-2)}{x-5} < 0$	$\frac{x^2-1}{x^2-6x+5} \geq 0 \Rightarrow \frac{(x+1)(x-1)}{(x-5)(x-1)} \geq 0$	$y = \sqrt{\frac{x^3-1}{x^3-x}}$	$y = \sqrt{\frac{x^2-16}{x^2-5x+4}}$	۳
$x = (-\infty, 1) \cup (2, 5)$	$x = (-\infty, -1] \cup (5, +\infty)$	$D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$	$D_f = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$	
الف) $y = \sqrt{4 - \sqrt{2-x}}$	$y = \sqrt{3 - \sqrt{x-2}}$			۴
$2-x \geq 0 \Rightarrow x \leq 2$	$x-2 \geq 0 \Rightarrow x \geq 2$			
$4 - \sqrt{2-x} \geq 0 \Rightarrow \sqrt{2-x} \leq 4 \Rightarrow 2-x \leq 16 \Rightarrow x \geq -14$	$3 - \sqrt{x-2} \geq 0 \Rightarrow \sqrt{x-2} \leq 3 \Rightarrow x-2 \leq 9 \Rightarrow x \leq 11$			
$-14 \leq x \leq 2$	$2 \leq x \leq 11$			
$\Rightarrow D_f = [-14, 2]$	$\Rightarrow D_f = [2, 11]$			

$$\text{الف) } y = \sqrt{4-2x^2} \Rightarrow 4-2x^2 \geq 0$$

$$2(\sqrt{2}+x)(\sqrt{2}-x) \geq 0$$

$$\begin{array}{c} -\sqrt{2} \quad + \quad \sqrt{2} \\ \circ \quad \quad \quad \circ \end{array}$$

$$D_f = [-\sqrt{2}, +\sqrt{2}]$$

$$\text{ب) } y = \sqrt{3|x|-9} \Rightarrow 3|x|-9 \geq 0$$

$$3(|x|-3) \geq 0$$

$$|x|-3 \geq 0 \Rightarrow |x| \geq 3 \Rightarrow \begin{cases} x \geq 3 \\ x \leq -3 \end{cases}$$

$$D_f = (-\infty, -3] \cup [3, +\infty)$$

$$\text{الف) } y = \sqrt[3]{\frac{|x|+1}{|x|-3}}$$

$$|x|-3 \neq 0$$

$$|x| \neq 3$$

$$x \neq \pm 3$$

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

$$\text{ب) } y = \sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$$

$$x \geq 0$$

$$\sqrt{x}-3 \neq 0$$

$$\sqrt{x} \neq 3$$

$$x \neq 9$$

$$D_f = [0, +\infty) - \{9\}$$

$$\text{الف) } y = \frac{\sin x}{x \cos x - 1}$$

$$x \cos x - 1 \neq 0 \Rightarrow x \cos x \neq 1$$

$$\cos x \neq \frac{1}{x}$$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{x}, 2k\pi + \frac{3\pi}{x} \right\}$$

$$\text{ب) } y = \frac{\cos x + 1}{x \sin x + 1}$$

$$x \sin x + 1 \neq 0$$

$$x \sin x \neq -1 \Rightarrow \sin x \neq -\frac{1}{x}$$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{3\pi}{2}, 2k\pi + \frac{5\pi}{2} \right\}$$

$$\text{ج) } y = \frac{\tan x + x}{\cot x - 1}$$

$$\cot x - 1 \neq 0$$

$$\cot x \neq 1$$

$$\tan x = \frac{\sin x}{\cos x}$$

$$\cot x = \frac{\cos x}{\sin x}$$

$$D_f = \mathbb{R} - \left\{ \frac{k\pi}{x}, k\pi + \frac{\pi}{x} \right\}$$

$$\text{د) } y = \frac{\sin x + 1}{x \sin^2 x - 3}$$

$$x \sin^2 x - 3 \neq 0 \Rightarrow x \sin^2 x \neq 3 \Rightarrow \sin x \neq \pm \frac{\sqrt{3}}{x}$$

$$D_f = \mathbb{R} - \left\{ k\pi - \frac{\pi}{x}, k\pi + \frac{\pi}{x} \right\}$$

$$y = \frac{1}{\sqrt{2|x-2| - \frac{1}{x}}}$$

$$2|x-2| - \frac{1}{x} > 0 \Rightarrow 2|x-2| > \frac{1}{x} \Rightarrow |x-2| > \frac{1}{2x}$$

$$\begin{array}{l} x-2 > \frac{1}{2x} \quad x-2 < -\frac{1}{2x} \\ x > \frac{9}{4} \quad x < \frac{5}{4} \end{array}$$

$$D_f = (-\infty, \frac{5}{4}) \cup (\frac{9}{4}, +\infty)$$

$$\text{الف) } y = \sqrt{4-2|x|}$$

$$4-2|x| \geq 0 \Rightarrow 4 \geq 2|x| \Rightarrow 2 \geq |x| \Rightarrow -2 \leq x \leq 2$$

$$D_f = [-2, 2]$$

$$\text{ب) } y = \sqrt{\frac{|x|}{|x|}}$$

$$|x| \neq 0$$

$$x \neq 0$$

$$D_f = \mathbb{R} - \{0\}$$

عبارت زیر را در کمال سنج ماه منقح می شود.