

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره: کلاس: درس: B

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

$$\text{الف) } y = \sqrt{4-x^2} \Rightarrow 4-x^2 \geq 0 \Rightarrow -2 \leq x \leq 2 \Rightarrow x \in \sqrt{4} \Rightarrow x \in [-2, 2]$$

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

$$\text{ب) } y = \sqrt[3]{|x|-4} \Rightarrow |x|-4 \geq 0 \Rightarrow |x| \geq 4 \Rightarrow x \geq 4 \text{ or } x \leq -4$$

$$D_f = (-\infty, -4] \cup [4, +\infty)$$

$$\text{الف) } \sqrt[3]{\frac{|x|+1}{|x|-4}} = |x|-4 \neq 0 \Rightarrow |x| \neq 4 \Rightarrow R - \{4, -4\} = D_f$$

$$\text{ب) } \sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-4}} = \sqrt{x}-4 \neq 0 \Rightarrow \sqrt{x} \neq 4 \Rightarrow x \neq 16$$

$$\Rightarrow D_f = [0, 9) \cup (9, +\infty)$$

$$\text{الف) } y = \frac{\sin x}{\cos x - 1} \Rightarrow \cos x - 1 \neq 0 \Rightarrow \cos x \neq 1 \Rightarrow x \neq 2k\pi \Rightarrow x \in \{2k\pi \pm \frac{\pi}{2}\}$$

$$\text{ب) } y = \frac{\cos x + 1}{\sin x + 1} = \sin x + 1 \neq 0 \Rightarrow \sin x \neq -1 \Rightarrow x \neq 2k\pi + \frac{3\pi}{2} \Rightarrow x \in \{2k\pi + \frac{\pi}{2}\}$$

$$\text{ج) } y = \frac{\tan x + 2}{\cot x - 1} = \frac{\sin x + 2 \cos x}{\cos x - \sin x} \Rightarrow \begin{cases} \cos x \neq 0 \\ \sin x \neq 1 \\ \cot x \neq 1 \end{cases} \Rightarrow x \in \left\{ \frac{k\pi}{2}, k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2} \right\}$$

$$\text{د) } y = \frac{\sin x + 1}{\sin x - 4} \Rightarrow \sin x - 4 \neq 0 \Rightarrow \sin x \neq 4 \Rightarrow x \in R$$

$$y = \frac{1}{\sqrt{2|x-2|-\frac{1}{2}}} \Rightarrow 2|x-2|-\frac{1}{2} > 0 \Rightarrow |x-2| > \frac{1}{4}$$

$$\Rightarrow x-2 > \frac{1}{4} \Rightarrow x > \frac{9}{4}$$

$$\Rightarrow x-2 < -\frac{1}{4} \Rightarrow x < \frac{7}{4}$$

$$D_f = (-\infty, \frac{7}{4}) \cup (\frac{9}{4}, +\infty)$$

$$\text{الف) } \sqrt{4-2|x|} \Rightarrow 4-2|x| \geq 0 \Rightarrow -2|x| \geq -4 \Rightarrow |x| \leq 2$$

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

$$\text{ب) } y = \sqrt{\frac{|x|}{|x|}} \Rightarrow \frac{|x|}{|x|} \geq 0 \Rightarrow x \neq 0$$

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