

کلاس: دهم پسر A

باسم خداوند تعالی تکلیف شماره: ۶

نام و نام خانوادگی: نام آزاد

19, 178

الف) $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}} \rightarrow \frac{x^2 - 4x}{x^2 - x} \geq 0$ $\frac{x(x-4)}{x(x-1)(x+1)} \geq 0$ $\frac{-1 \quad 0 \quad 1 \quad 4}{- \quad + \quad - \quad +}$ $D_f = (-1, 0) \cup (0, 1) \cup [4, +\infty)$ Ⓟ ✓	ب) $y = \sqrt{\frac{x^2 - x^2}{x^2 - x}} \rightarrow \frac{x^2 - x^2}{x^2 - x} \geq 0$ $\frac{x^2(x-1)(x+1)}{x(x-1)(x+1)} \geq 0$ $\frac{-1 \quad 0 \quad 1}{+ \quad + \quad +}$ ⬅ علامه مثبت $D_f = \mathbb{R} - \{-1, 0, 1\}$	1
الف) $y = \frac{x+1}{\sqrt{x+ x }} \rightarrow x+ x > 0$ $\rightarrow x > 0$ $D_f = (0, +\infty) \subset \mathbb{R}^+$ Ⓟ ✓	ب) $y = \frac{1}{\sqrt{x x }} \rightarrow x x > 0$ $\rightarrow x > 0$ $D_f = (0, +\infty) \subset \mathbb{R}^+$	۲
الف) $y = \sqrt{2 - [x]} \rightarrow 2 - [x] \geq 0$ $\rightarrow [x] \leq 2 \rightarrow x < 3$ $D_f = (-\infty, 3)$ Ⓟ ✓	ب) $y = \frac{1}{\sqrt{2 - [x]}} \rightarrow 2 - [x] > 0$ $\rightarrow [x] < 2 \rightarrow x < 2$ $D_f = (-\infty, 2)$	۳
الف) $y = \sqrt{[x - \frac{1}{x}] + [x + \frac{1}{x}]}$ $[x - \frac{1}{x}] + [x + \frac{1}{x}] \geq 0 \rightarrow [x - \frac{1}{x}] + [x - \frac{1}{x}] + 1 \geq 0$ $2[x - \frac{1}{x}] \geq -1 \xrightarrow{\times 2} [x - \frac{1}{x}] \geq -\frac{1}{2} \rightarrow [x - \frac{1}{x}] > 0$ $D_f = [\frac{1}{2}, +\infty)$ Ⓟ ✓	ب) $y = \sqrt{[x - \frac{1}{x}] + [-x + \frac{1}{x}]}$ $a \leftarrow [x - \frac{1}{x}]$ $-a \leftarrow [-x + \frac{1}{x}]$ if $a \in \mathbb{Z} \rightarrow [a] + [-a] = a - a = 0 \rightarrow \checkmark$ if $a \notin \mathbb{Z} \rightarrow [a] + [-a] = -1$ $x - \frac{1}{x} \in \mathbb{Z} \rightarrow D_f = \{k + \frac{1}{x} \mid k \in \mathbb{Z}\}$	۴
الف) $y = \frac{2}{\sin x - 1} \rightarrow \sin x - 1 \neq 0$ $\rightarrow \sin x \neq 1$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$ Ⓟ ✓	ب) $y = \frac{2}{x \sin^2 x - 1} \rightarrow \sin^2 x \neq \frac{1}{x}$ $\rightarrow \sin x \neq \pm \sqrt{\frac{1}{x}} \rightarrow 2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2}$ $D_f = \mathbb{R} - \{\frac{k\pi}{x} + \frac{\pi}{2}\}$	۵

ا) $y = \sqrt{x \sin x - 1} \rightarrow x \sin x - 1 \geq 0$ $\rightarrow \sin x \geq \frac{1}{x}$ $D_f = \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4} \right]$ 	ب) $y = \sqrt{\cos x - 1} \rightarrow \cos x - 1 \geq 0$ $\cos x \geq 1$ $D_f = \{2k\pi\}$ 	4								
ا) $\cos y = x - 2$ $\rightarrow -1 \leq x - 2 \leq 1 \rightarrow 1 \leq x \leq 3$ $D_f = [-3, -1] \cup [1, 3]$	ب) $y = \arcsin(x^2 + 2x + 1)$ جدول تعیین علامت <table> <tr> <td>$x^2 + 2x + 1$</td> <td>-1</td> <td>0</td> <td>1</td> </tr> <tr> <td>$+$</td> <td>$-$</td> <td>0</td> <td>$+$</td> </tr> </table> $\rightarrow (x+1)(x+2) \geq 0$ $\rightarrow x(x+3) \leq 0$ $D_f = [-3, -2] \cup [-1, 0]$	$x^2 + 2x + 1$	-1	0	1	$+$	$-$	0	$+$	
$x^2 + 2x + 1$	-1	0	1							
$+$	$-$	0	$+$							
ا) $y = \sqrt{x - \log_2(x-2)}$ $\rightarrow x-2 > 0 \rightarrow x > 2$ $\rightarrow \log_2(x-2) \leq 2$ $\rightarrow x-2 \leq 2^2 \rightarrow x \leq 6$ $D_f = (2, 6]$	ب) $y = \log(x^2 - x)$ $x(x-1) > 0$ <table> <tr> <td>x</td> <td>-1</td> <td>0</td> <td>1</td> </tr> <tr> <td>$+$</td> <td>$-$</td> <td>0</td> <td>$+$</td> </tr> </table> $D_f = (-1, 0) \cup (1, +\infty)$	x	-1	0	1	$+$	$-$	0	$+$	8
x	-1	0	1							
$+$	$-$	0	$+$							
ا) $y = \frac{x}{x^2 + 1} \rightarrow x^2 + 1 \neq 0 \rightarrow x^2 + 1 > 0$ $D_f = \mathbb{R}$	ج) $y = \frac{x}{x^2 - 2} \rightarrow x^2 - 2 \neq 0 \rightarrow x^2 \neq 2$ $\rightarrow x \neq \pm \sqrt{2}$ $D_f = \mathbb{R} - \{\pm \sqrt{2}\}$	9								
ب) $y = \frac{x}{x^2 - 1} \rightarrow x^2 - 1 \neq 0 \rightarrow x^2 \neq 1$ $\rightarrow x \neq \pm 1$ $D_f = \mathbb{R} - \{1, -1\}$	د) $y = \frac{x}{x^2 - 2} \rightarrow x^2 - 2 \neq 0 \rightarrow x^2 \neq 2$ $\rightarrow x \neq \pm \sqrt{2}$ $D_f = \mathbb{R} - \{\pm \sqrt{2}\}$									
ا) $y = (x+1)!$ $\rightarrow x+1 \in \mathbb{N}$ $\rightarrow x = \frac{n-1}{1}$ $D_f = \left\{ \frac{k-1}{1} \mid k \in \mathbb{N} \right\}$	ب) $y = \left(\frac{x-2}{x-5} \right)!$ $\rightarrow \frac{x-2}{x-5} \in \mathbb{N} \rightarrow \frac{5k-2}{5k-5} \in \mathbb{N}$ $D_f = \left\{ \frac{5k-2}{5k-5} \mid k \in \mathbb{N} \right\}$	10								