

۱۷، ۲۵

کلاس : دهم ریاضی

تکلیف شماره : ۴

نام و نام خانوادگی : آریانا ترک تری

الف) $y = \sqrt{4 - \sqrt{2-x}}$

① $4 - \sqrt{2-x} \geq 0 \Rightarrow 4 \geq \sqrt{2-x} \Rightarrow 16 \geq 2-x \Rightarrow x \geq 2-16 = -14$

② $2-x \geq 0 \Rightarrow 2 \geq x \Rightarrow D_f = [-14, 2] \checkmark$

ب) $y = \sqrt{3 - \sqrt{x-2}}$

① $3 - \sqrt{x-2} \geq 0 \Rightarrow 3 \geq \sqrt{x-2} \Rightarrow 9 \geq x-2 \Rightarrow 11 \geq x$

② $x-2 \geq 0 \Rightarrow x \geq 2 \Rightarrow D_f = [2, 11] \checkmark$

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

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

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

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الف) $y = 3 \sqrt{\frac{|x|+1}{|x|-3}} \Rightarrow |x|-3 \neq 0 \Rightarrow |x| \neq 3 \Rightarrow x \neq \pm 3$

$D_f = \mathbb{R} - \{\pm 3\} \checkmark$

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۰ شامل نمی شود $\uparrow$ $[-9, +\infty)$

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

① $\sqrt{x} \geq 0 \Rightarrow x \geq 0$

② $\sqrt{x}-3 \neq 0 \Rightarrow \sqrt{x} \neq 3 \Rightarrow x \neq 9 \Rightarrow D_f = \mathbb{R}^+ - \{9\}$

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الف) $y = \frac{\sqrt{3-|x|}}{|x|+2}$

① $3-|x| \geq 0 \Rightarrow 3 \geq |x| \Rightarrow -3 \leq x \leq 3$

② $|x|+2 \neq 0 \Rightarrow |x| \neq -2 \Rightarrow x \in \mathbb{R} \Rightarrow D_f = [-3, 3] \checkmark$

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ب) $y = \frac{\sqrt{4-x^2}}{|x|-1}$

① $4-x^2 \geq 0 \Rightarrow 4 \geq x^2 \Rightarrow \sqrt{4} \geq \sqrt{x^2} \Rightarrow 2 \geq |x| \Rightarrow -2 \leq x \leq 2$

② $|x|-1 \neq 0 \Rightarrow |x| \neq 1 \Rightarrow x \neq \pm 1$

$D_f = (-2, 2) - \{\pm 1\} \checkmark$

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الف) $y = \frac{x+1}{\sqrt{x+|x|}}$

$\Rightarrow x+|x| > 0 \Rightarrow x > |x| \Rightarrow x > 0 \Rightarrow D_f = (0, +\infty) \checkmark$

ب) $y = \frac{1}{\sqrt{x|x|}}$

$\Rightarrow x|x| > 0 \Rightarrow x > 0 \Rightarrow D_f = (0, +\infty) \checkmark$

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الف) $y = \sqrt{2 - [x]} \Rightarrow 2 - [x] \geq 0 \Rightarrow 2 \geq [x]$

$D_f = (-\infty, 2)$

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ب) $y = \frac{1}{\sqrt{2 - [x]}} \Rightarrow 2 - [x] > 0 \Rightarrow 2 > [x]$

$D_f = (-\infty, 2)$

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الف) $y = \frac{1}{x[x]}$ $\Rightarrow x[x] \neq 0 \Rightarrow x \neq 0$ $[x] = 0 \Rightarrow 0 < x < 1$

$D_f = (-\infty, 0) \cup [1, +\infty)$

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ب) $\frac{1}{\sqrt{-x[x]}}$ $\Rightarrow -x[x] > 0 \Rightarrow x[x] < 0 \Rightarrow D_f = \emptyset$

+ همیشه علامت ایلین و برکت ایلین برابر است

✓

الف) $\sqrt{[x - \frac{1}{x}] + [x + \frac{2}{x}]} \Rightarrow [x + \frac{2}{x} - 1] + [x + \frac{2}{x}] \geq 0 \Rightarrow [x + \frac{2}{x}] - 1 + [x + \frac{2}{x}] \geq 0$
 $\Rightarrow [x + \frac{2}{x}] \geq \frac{1}{x} \Rightarrow [x + \frac{2}{x}] \geq 1 \Rightarrow x + \frac{2}{x} \geq 1 \Rightarrow x \geq 1 - \frac{2}{x} \Rightarrow x \geq \frac{1}{x}$
 $D_f = [\frac{1}{x}, +\infty)$

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ب) $\sqrt{[x - \frac{1}{x}] + [-x + \frac{1}{x}]} \xrightarrow{\text{اگر}} \begin{cases} x = z & [x] + [-x] = 0 \\ x \neq z & [x] + [-x] = -1 \end{cases} \Rightarrow x - \frac{1}{x} \in \mathbb{Z}$
 $D_f = \{x | x = k + \frac{1}{x}, k \in \mathbb{Z}\}$

الف) $\frac{1}{x \sin^2 x - 1} \Rightarrow x \sin^2 x - 1 \neq 0 \Rightarrow x \sin^2 x \neq 1 \Rightarrow \sin^2 x \neq \frac{1}{x} = \sin x \neq \frac{1}{\sqrt{x}} = \frac{\sqrt{x}}{x}$
 $\Rightarrow \sin x \neq \frac{\sqrt{x}}{x}$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{4}, 2k\pi + \pi + \frac{\pi}{4}\}$
 $D_f = \mathbb{R} - \{\frac{k\pi}{2} + \frac{\pi}{4}\}$

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ب) $y = \frac{\cot x + 1}{\tan x + 1} \Rightarrow \tan x + 1 \neq 0 \Rightarrow \frac{\sin x}{\cos x} + 1 \neq 0 \Rightarrow \cos x \neq 0$
 $\tan x \neq -1 \Rightarrow x \neq k\pi - \frac{\pi}{4}$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}\}$

at, tan $\rightarrow x + \frac{k\pi}{2}$

الف) $y = \sqrt{x \sin x - 1} \Rightarrow x \sin x - 1 \geq 0 \Rightarrow x \sin x \geq 1 \Rightarrow \sin x \geq \frac{1}{x}$

$D_f = (2k\pi - \frac{\pi}{4}, 2k\pi + \frac{\pi}{4})$
 $D_y = [2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}]$

ب) $y = \sqrt{1 - x \cos x} \Rightarrow 1 - x \cos x \geq 0 \Rightarrow 1 \geq x \cos x \Rightarrow \frac{1}{x} \geq \cos x$
 $D_y = [2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}]$

$D_f = (k\pi + \frac{\pi}{4}, \frac{\pi}{4}) \cup (\frac{\pi}{4} - \frac{\pi}{4}, \frac{3\pi}{4}) \cup (\frac{3\pi}{4} + \frac{\pi}{4}, \frac{5\pi}{4})$

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