

نام و نام خانوادگی: ... باسختنامه تشریحی تکلیف شماره ۴ کلاس: ...

الف) $y = \sqrt{4-2x-x}$ $\begin{cases} 4-x \geq 0 \Rightarrow x \leq 4 \text{ (I)} \\ 4-\sqrt{4-x} \geq 0 \Rightarrow \sqrt{4-x} \leq 4 \Rightarrow 14 \geq 4-x \Rightarrow x \geq -10 \text{ (II)} \end{cases}$

$D_f = I \cap II \Rightarrow D_f = [-10, 4]$

ب) $y = \sqrt{4-\sqrt{4-x}}$ $\begin{cases} 4-x \geq 0 \Rightarrow x \leq 4 \text{ (I)} \\ 4-\sqrt{4-x} \geq 0 \Rightarrow \sqrt{4-x} \leq 4 \Rightarrow 9 \geq 4-x \Rightarrow x \geq -5 \text{ (II)} \end{cases}$

$D_f = I \cap II \Rightarrow D_f = [-5, 4]$

الف) $y = \sqrt{4-2x^2}$ $\Rightarrow |4-2x^2| \geq 0 \Rightarrow \begin{cases} 4-2x^2 \geq 0 \Rightarrow x^2 \leq 2 \Rightarrow -\sqrt{2} \leq x \leq \sqrt{2} \\ 4-2x^2 \leq 0 \Rightarrow x^2 \geq 2 \Rightarrow x \leq -\sqrt{2} \text{ or } x \geq \sqrt{2} \end{cases}$

$D_f = (-\infty, -\sqrt{2}] \cup [\sqrt{2}, \infty)$

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

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

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

ب) $y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\Rightarrow \begin{cases} x \geq 0 \\ \sqrt{x} \neq 3 \Rightarrow x \neq 9 \end{cases} D_f = [0, \infty) - \{9\}$

الف) $y = \frac{\sqrt{4-|x|}}{|x|+2}$ $\Rightarrow \begin{cases} 4-|x| \geq 0 \Rightarrow 4 \geq |x| \Rightarrow -2 \leq x \leq 2 \text{ (I)} \\ |x|+2 \neq 0 \Rightarrow |x| \neq -2 \text{ (II)} \end{cases} I \cap II \Rightarrow D_f = [-2, 2]$

ب) $y = \frac{\sqrt{4-x^2}}{|x|-1}$ $\Rightarrow \begin{cases} 4-x^2 \geq 0 \Rightarrow -2 \leq x \leq 2 \\ |x|-1 \neq 0 \Rightarrow |x| \neq 1 \Rightarrow x \neq \pm 1 \end{cases} D_f = (-2, -1) \cup (-1, 1) \cup (1, 2]$

الف) $y = \frac{x+1}{\sqrt{x+|x|}}$ $\Rightarrow \begin{cases} x \geq 0 \\ x \neq -1 \end{cases} D_f = R^+ - \{-1\}$

$x+|x| > 0 \Rightarrow |x| > -x \Rightarrow R^+$

ب) $y = \frac{1}{\sqrt{x|x|}}$ $\Rightarrow \begin{cases} x \geq 0 \\ x \neq 0 \end{cases} D_f = R^+ - \{0\}$

$$\text{الف) } y = \sqrt{2 - [n]} \Rightarrow 2 - [n] \geq 0 \Rightarrow 2 \geq [n] \rightarrow D_f = (-\infty, 2)$$

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$$\text{ب) } y = \frac{1}{\sqrt{2 - [n]}} \Rightarrow 2 - [n] > 0 \Rightarrow 2 > [n] \rightarrow D_f = (-\infty, 2)$$

$$\text{الف) } y = \frac{1}{n[n]} \Rightarrow \begin{matrix} 0 & x \\ + & \checkmark \\ - & \checkmark \end{matrix}$$

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

$$\mathbb{R} - [0, 1)$$

(1, 5)

$$\text{ب) } y = \frac{1}{\sqrt{1 - n[n]}}$$

$$\Rightarrow -n[n] > 0 \Rightarrow n[n] < 0$$

$n, [n]$ هر دو هم‌نوا هستند

$$D_f = \emptyset$$

$$\text{الف) } y = \sqrt{[n - \frac{1}{n}] + [n + \frac{1}{n}]} \Rightarrow [n + \frac{1}{n} - 1] + [n + \frac{1}{n}] \geq 0$$

$$[n + \frac{1}{n}] - 1 + [n + \frac{1}{n}] \geq 0 \Rightarrow 2[n + \frac{1}{n}] \geq 1 \Rightarrow [n + \frac{1}{n}] \geq \frac{1}{2} \Rightarrow n + \frac{1}{n} \geq 1$$

$$n \geq 1 - \frac{1}{n} \Rightarrow n \geq \frac{1}{n} \Rightarrow D_f = [\frac{1}{n}, +\infty) \quad n - \frac{1}{n} \in \mathbb{Z} \rightarrow n \in \mathbb{Z} + \frac{1}{n}$$

$$\text{ب) } y = \sqrt{[n - \frac{1}{n}] + [-n + \frac{1}{n}]} \Rightarrow [n - \frac{1}{n}] + [-n + \frac{1}{n}] \geq 0$$

$$[n] + [-n] = [-n + \frac{1}{n}] + [-n + \frac{1}{n}] \geq 0 \quad \cancel{[-n + \frac{1}{n}] \leq 0} \Rightarrow -n + \frac{1}{n} \leq 0 \quad \frac{1}{n} \leq n$$

$$[n] \cdot [-n] = -1$$

$$\text{الف) } y = \frac{1}{\sqrt{\sin^2 n - 1}} \Rightarrow \sqrt{\sin^2 n - 1} \neq 0 \quad \sin n \neq \pm \frac{1}{n}$$

$$\mathbb{R} - \{k\pi + \frac{\pi}{2}\}$$

$$D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi + \pi - \frac{\pi}{4}\}$$

$$\text{ب) } y = \frac{\cot n + 1}{\tan n + 1}$$

$$\Rightarrow \tan n + 1 \neq 0 \Rightarrow \frac{\sin n}{\cos n} \neq -1 \Rightarrow D_f = \mathbb{R} - \{k\pi - \frac{\pi}{4}, k\pi - \frac{3\pi}{4}\}$$

$$\text{الف) } y = \sqrt{2 \sin n - 1}$$

$$\Rightarrow 2 \sin n - 1 \geq 0 \Rightarrow \sin n \geq \frac{1}{2}$$

$$D_f = [2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}]$$



$$\text{ب) } y = \sqrt{1 - 2 \cos n}$$

$$\Rightarrow 1 - 2 \cos n \geq 0 \Rightarrow -2 \cos n \geq -1 \Rightarrow \cos n \leq \frac{1}{2}$$



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

$$[2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3}]$$