

نام و نام خانوادگی: موسی‌پور محمدعلی پاسخنامه تشریحی تکلیف شماره کلاس: چهارم

الف) $2-x \geq 0 \Rightarrow x \leq 2$ - $4 - \sqrt{2-x} \geq 0 \Rightarrow 2-x \leq 16 \Rightarrow x \geq -14$
 دامنه: $[2, -14]$ - $-14 \leq x \leq 2$

ب) $x-2 \geq 0 \Rightarrow x \geq 2$ $3 - \sqrt{x-2} \geq 0 \Rightarrow \sqrt{x-2} \leq 3 \Rightarrow x-2 \leq 9 \Rightarrow x \leq 11$
 $2 \leq x \leq 11$ [2, 11]

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

ب) $3|x|-9 \geq 0 \Rightarrow 3|x| \geq 9 \Rightarrow |x| \geq 3$
 $(-\infty, -3] \cup [3, \infty)$

الف) $|x-2| \neq 0 \Rightarrow |x| \neq 2$ $|x+3| > 0 \Rightarrow x > -3$

$D = \{x \in \mathbb{R} \mid |x| > 2\} = (-\infty, -2) \cup (2, \infty)$

ب) $x \geq 0$ $x \neq 9 \Rightarrow \sqrt{x} \neq 3 \Rightarrow \sqrt{x} - 3 \neq 0$

$D = [0, \infty) \setminus \{9\} = [0, 9) \cup (9, \infty)$

الف) $3-|x+1| \geq 0 \Rightarrow |x+1| \leq 3 \Rightarrow x \in [-4, 2]$ $D = [-4, 2]$

ب) $|x+1-3| \neq 0 \Rightarrow |x| \neq 1$

الف) $x+|x| \geq 0$ $x \geq 0 \Rightarrow x+|x| = 2x \geq 0$ $x \leq 0 \Rightarrow x+|x| = 0$
 $D = (0, \infty)$

ب) $x|x| \geq 0$

$D = (0, \infty)$

$x|x| \geq 0 \Rightarrow x^2 \geq 0$ $x \geq 0$ $x \leq 0$
 اگر $x \geq 0$ $x^2 \geq 0$ $x \leq 0$ $x^2 \geq 0$
 اگر $x \leq 0$ $x^2 \geq 0$ $x \geq 0$ $x^2 \geq 0$

ا) $1 - [x] \geq 0 \Rightarrow [x] \leq 1 \quad D = \{x \in \mathbb{R} \mid [x] \leq 1\} = (-\infty, 2)$

ب) $1 - [x] > 0 \Rightarrow [x] \leq 1 \quad D = (-\infty, 2)$

ا) $x \neq 0, [x] \neq 0 \quad D = \mathbb{R} \setminus \{0\} \setminus \{x \in \mathbb{R} \mid [x] = 0\} = \mathbb{R} \setminus (-1, 1)$

ب) $-x[x] \geq 0, 0 < x < 1 \Rightarrow -x[x] \leq 0 \Rightarrow [x] \geq 0 \Rightarrow x < 1$
 $-x[x] > 0 \Rightarrow [x] \leq -1 \Rightarrow x \leq 0 \quad D = (-\infty, 0)$

ا) $x - \frac{1}{x} = \begin{cases} n-1 & 0 < x < \frac{1}{x} \\ n & \frac{1}{x} \leq x < 1 \end{cases}, [x + \frac{1}{x}] = \begin{cases} n & 0 < x < \frac{1}{x} \\ n+1 & \frac{1}{x} \leq x < 1 \end{cases}$
 $[x - \frac{1}{x}] + [x + \frac{1}{x}] = \begin{cases} 2n-1, 0 < x < \frac{1}{x} \\ 2n+1, \frac{1}{x} \leq x < 1 \end{cases} \quad x \in [n, n+1) \Rightarrow n-1 \leq x < n \Rightarrow n \in \mathbb{Z}$
 $D = \left[\frac{1}{x}, \infty\right) \subset [1, \infty)$
 ب) $S = \begin{cases} -1 & 0 < x < \frac{1}{x} \\ 0 & \frac{1}{x} \leq x < 1 \\ -1 & \frac{1}{x} \leq x < 1 \end{cases} \quad D = \{n + \frac{1}{x} \mid n \in \mathbb{Z}\}$

ا) $1 - \sin^2 x - 1 \neq 0 \Rightarrow \sin x \neq \pm 1 \quad D = \mathbb{R} \setminus \left\{ \frac{\pi}{2} + k\pi, \frac{3\pi}{2} + k\pi \mid k \in \mathbb{Z} \right\}$

ب) $\frac{\cot x + 1}{\tan x + 1} = \frac{\cos x}{\sin x} = \cot x \quad D = \mathbb{R} \setminus \left\{ \frac{\pi}{2} + k\pi, -\frac{\pi}{2} + k\pi \mid k \in \mathbb{Z} \right\}$
 $\sin x \neq 0 \Rightarrow x \neq k\pi \quad \tan x \neq -1 \Rightarrow x \neq -\frac{\pi}{4} + k\pi$
 $\cos x \neq 0 \Rightarrow x \neq \frac{\pi}{2} + k\pi$

ا) $1 - \sin x - 1 \geq 0 \Rightarrow \sin x \geq \frac{1}{2} \quad D = \bigcup_{k \in \mathbb{Z}} \left[\frac{\pi}{6} + 2k\pi, \frac{5\pi}{6} + 2k\pi \right]$
 ب) $D = k\pi \cup \left[\frac{\pi}{3} + 2k\pi, \frac{2\pi}{3} + 2k\pi \right]$