

(الف) $2-x > 0 \rightarrow x < 2$ I, $4-\sqrt{2-x} > 0 \Rightarrow 4 > \sqrt{2-x} \Rightarrow 14 > 2-x \Rightarrow 12 < x$ II
 $\Rightarrow I \cap II \Rightarrow \text{---} \Rightarrow D_f = [-12, 2]$

(ب) $x-2 > 0 \rightarrow x > 2$ I, $3\sqrt{x-2} > 0 \Rightarrow \sqrt{x-2} < 3 = x-2 < 9 \Rightarrow x < 11$ II
 $I \cap II \Rightarrow \text{---} \Rightarrow D_f = [2, 11]$

(الف) $4-2x^2 > 0 \rightarrow 2x^2 < 4 \rightarrow x^2 < 2 \rightarrow -\sqrt{2} < x < \sqrt{2} \Rightarrow D_f = [-\sqrt{2}, \sqrt{2}]$

(ب) $3|x| > 9 \rightarrow |x| > 3 \Rightarrow \begin{matrix} x > 3 \text{ I} \\ x < -3 \text{ II} \end{matrix} \Rightarrow I \cap II \Rightarrow \text{---} \Rightarrow D_f = (-\infty, -3) \cup (3, \infty)$

(الف) $|x|-3 \neq 0 \Rightarrow |x| \neq 3 \Rightarrow x \neq \pm 3 \Rightarrow D_f = \mathbb{R} - \{\pm 3\}$

(ب) $\sqrt{x} > 0 \rightarrow x > 0$ و $\sqrt{x-3} \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9$ II $\Rightarrow I \cap II = \text{---}$
 $D_f = [0, \infty) - \{9\}$

(الف) $|x|+2 \neq 0 \Rightarrow x \neq \pm 2$ I, $\sqrt{3-|x|} > 0 \rightarrow 3 > |x| \Rightarrow -3 < x < 3$ II $\Rightarrow I \cap II \Rightarrow \text{---}$

(ب) $|x|-1 \neq 0 \Rightarrow x \neq \pm 1$, $(2-x)(2+x) > 0 \Rightarrow \frac{2}{-1} < \frac{2}{x} < \frac{2}{1} \Rightarrow x < -2$ II $\Rightarrow D_f = [-2, 2] - \{\pm 1\}$

(الف) $\sqrt{x+|x|} > 0 \rightarrow x+|x| > 0 \Rightarrow \begin{cases} \oplus \checkmark \\ \ominus \times \\ \ominus \times \end{cases} \Rightarrow D_f = \mathbb{R}^+$

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(-) چون منفی و سرده (0) چون صفری شود

الف) $r - [x] > 0 \rightarrow [x] < r \rightarrow D_f = (-\infty, r)$

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ب) $r - [x] > 0 \rightarrow [x] < r \rightarrow D_f = (-\infty, r)$

الف) $\underbrace{r - [x]}_{\substack{\downarrow \\ 0, 1, 2, \dots}} \begin{cases} \oplus \rightarrow \checkmark \\ \ominus \rightarrow x \\ \ominus \rightarrow \checkmark \end{cases} \Rightarrow D_f = \mathbb{R} - [0]$

~~$D_f = \mathbb{R} - [0]$~~ $D_f = \mathbb{R} - \{0, 1\}$
 $(1, 2, \infty)$

ب) $-r - [x] > 0 \Rightarrow D_f = \emptyset$ ✓

الف) $[x - 1 + \frac{1}{r}] + [x + \frac{1}{r}] \geq 0 \rightarrow r[x + \frac{1}{r}] \geq 1 \rightarrow [x + \frac{1}{r}] \geq \frac{1}{r} \Rightarrow x + \frac{1}{r} \geq 1$
 $x \geq \frac{1}{r} \rightarrow D_f = [\frac{1}{r}, \infty_+)$ ✓

ب) $[x - \frac{1}{r}] + [- (x - \frac{1}{r})] \geq 0 \rightarrow$
 $\begin{cases} \text{if } [x] + [-x] \in \mathbb{Z} \Rightarrow 0 \\ \text{if } [x] + [-x] \notin \mathbb{Z} \Rightarrow -1 \end{cases} \Rightarrow D_f = \{x \mid x \in \mathbb{R} + \frac{1}{r}, k \in \mathbb{Z}\}$

$r \sin^2 x \neq 1 \Rightarrow \sin x \neq \pm \frac{1}{\sqrt{r}} \Rightarrow D_f = \mathbb{R} - [\frac{k\pi}{r} + \frac{\pi}{r}]$ ✓

$\frac{\cos}{\sin} + 1 \Rightarrow \frac{\sin}{\cos} + 1 \Rightarrow \begin{cases} \sin \neq 0 \\ \cos \neq 0 \\ \frac{\sin}{\cos} \neq -1 \end{cases} \rightarrow D_f = \mathbb{R} - [\frac{k\pi}{r}] \cup [k\pi - \frac{\pi}{r}]$ ✓

الف) $r \sin x \geq |I|, -1 \leq \sqrt{r \sin x - 1} \leq 1 \rightarrow \sin x \geq \frac{1}{r}, \sin x \leq 1 \rightarrow \frac{1}{r} \leq \sin x \leq 1$

$\Rightarrow D_f = [r k \pi + \frac{\pi}{r}, r k \pi + \frac{\pi}{r}]$ ✓

ب) $1 - r \cos x \geq 0 \rightarrow \cos x \leq \frac{1}{r} \rightarrow \sqrt{1 - r \cos x} \leq 1 \rightarrow 1 - r \cos x \leq 1 \rightarrow \cos x \geq 0$
 $0 \leq \cos x \leq \frac{1}{r} \rightarrow D_f = [r k \pi + \frac{\pi}{r}, r k \pi + \frac{\pi}{r}] \cup [r k \pi + \frac{\pi}{r}, r k \pi + \frac{\pi}{r}]$

$\hookrightarrow \mathbb{R} \setminus (r k \pi - \frac{\pi}{r}, r k \pi + \frac{\pi}{r})$