

①

الف) $2-x > 0 \rightarrow x < 2$
 $4-\sqrt{2-x} > 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow 2-x \leq 16 \rightarrow x \geq -14$
 $D_f = [-14, 2]$

ب) $x-2 > 0$
 $x > 0$
 $3-\sqrt{x-2} > 0$
 $\sqrt{x-2} \leq 3 \xrightarrow{\text{قوات}} x-2 \leq 9$
 $x \leq 11$
 $D_f = [2, 11]$

②

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

ب) $3|x|-9 > 0 \rightarrow 3|x| > 9 \rightarrow |x| > 3 \Rightarrow \begin{cases} x > 3 \\ x < -3 \end{cases} \Rightarrow D_f = (-\infty, -3) \cup (3, \infty)$

③

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

ب) $\sqrt{x} \neq 3 \rightarrow x \neq 9, x \geq 0 \Rightarrow D_f = [0, \infty) - \{9\}$

④

الف) $3-|x| > 0 \rightarrow |x| < 3$
 $|x| \neq -2$
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 $\Rightarrow D_f = (-3, 3)$

ب) $|x| \neq 1 \rightarrow x \neq \pm 1$
 $4-x^2 > 0 \rightarrow x^2 < 4 \rightarrow -2 < x < 2$
 $\Rightarrow D_f = (-2, 2) - \{\pm 1\}$

⑤

الف) $x+|x| > 0 \rightarrow |x| > -x \Rightarrow D_f = (0, \infty) = \mathbb{R}^+$

~~ب) $x > 0 \rightarrow x > 0 \rightarrow x > 0$~~
 ~~$x > 0 \rightarrow x > 0 \rightarrow x > 0$~~
 ~~$x > 0 \rightarrow x > 0 \rightarrow x > 0$~~

ب) $x|x| > 0 \rightarrow D_f = (0, \infty) = \mathbb{R}^+$

الف) $2 - [x] > 0 \rightarrow [x] < 2 \rightarrow D_f = (-\infty, 2)$

ب) $2 - [x] > 0 \rightarrow [x] < 2 \rightarrow D_f = (-\infty, 2)$

الف) $x[x] \neq 0 \rightarrow D_f \subseteq \mathbb{R} - [0, 1]$

ب) $-x[x] > 0 \rightarrow \underbrace{x[x] < 0}_{\text{هيسه مبيته}} \rightarrow D_f = \emptyset$

الف) $[x - \frac{1}{3}] + [x + \frac{2}{3}] > 0 \rightarrow [x + \frac{2}{3} - 1] + [x + \frac{2}{3}] > 0 \xrightarrow{+1} x + [x + \frac{2}{3}] > 1$

$[x + \frac{2}{3}] > \frac{1}{3} \rightarrow x + \frac{2}{3} > \frac{1}{3} \rightarrow x > -\frac{1}{3} \rightarrow D_f = [-\frac{1}{3}, +\infty)$

ب) $\sqrt{[x - \frac{1}{3}] + [-x + \frac{1}{3}]} \rightarrow \sqrt{[x - \frac{1}{3}] + [-(x - \frac{1}{3})]} \rightarrow x - \frac{1}{3} \in \mathbb{Z}$
 $x \in \mathbb{Z} + \frac{1}{3}$

$\Rightarrow D_f = \{x \mid x = k + \frac{1}{3}, k \in \mathbb{Z}\}$

الف) $2 \sin^2 x - 1 \neq 0 \rightarrow 2 \sin^2 x \neq 1 \rightarrow \sin^2 x \neq \frac{1}{2} \rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$

$\Rightarrow D_f = \mathbb{R} - \left\{ \frac{k\pi}{2} + \frac{\pi}{4} \right\}$

ب) $\left. \begin{array}{l} \cot x = \frac{\cos x}{\sin x} \rightarrow \sin x \neq 0 \\ \tan x = \frac{\sin x}{\cos x} \rightarrow \cos x \neq 0 \\ \tan x \neq -1 \end{array} \right\} D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi - \frac{\pi}{4} \right\}$

الف) $2 \sin x - 1 > 0 \rightarrow \sin x > \frac{1}{2} \Rightarrow D_f = [2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}]$

ب) $1 - 2 \cos x > 0 \rightarrow \cos x < \frac{1}{2} \Rightarrow D_f = [2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}]$