

الف) $\sqrt{x-2} \leq 4 \Rightarrow 0 \leq x-2 \leq 16 \Rightarrow -14 \leq x \leq 18 \Rightarrow D_f = [-14, 18]$

ب) $\sqrt{x-2} \leq 4 \Rightarrow x-2 \leq 16 \Rightarrow x \leq 18$
 $x-2 \geq 0 \Rightarrow x \geq 2$
 $\Rightarrow D_f = [2, 18]$

الف) $|x| \leq 4 \Rightarrow -4 \leq x \leq 4 \Rightarrow D_f = [-4, 4]$

ب) $3/x \geq 9 \Rightarrow |x| \geq 3 \Rightarrow \frac{-3}{+} \frac{3}{-} \frac{3}{+} \Rightarrow D_f = (-\infty, -3] \cup [3, +\infty)$

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

ب) $\sqrt{x} - 9 \neq 0 \Rightarrow \sqrt{x} \neq 9 \Rightarrow 0 \leq x \neq 81 \Rightarrow D_f = [0, +\infty) - \{81\}$

الف) $|x| \geq 3 \Rightarrow -3 \leq x \leq 3 \Rightarrow D_f = [-3, 3]$

ب) $(x-2)(x+2) \geq 0 \Rightarrow x \neq -1 \neq 1 \Rightarrow D_f = [-2, 2] - \{-1, 1\}$

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

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

الف) $1 - [x] \geq 0 \Rightarrow 1 \geq [x] \Rightarrow x < 2 \Rightarrow D_f = (-\infty, 2)$

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ب) $1 - [x] > 0 \Rightarrow 1 > [x] \Rightarrow x < 1 \Rightarrow D_f = (-\infty, 1)$

الف) $x[x] \neq 0 \Rightarrow \left. \begin{matrix} x \geq 1 \\ x < 0 \end{matrix} \right\} \Rightarrow D_f = (-\infty, 0) \cup [1, +\infty)$

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ب) $-x[x] > 0$ ممكن ان يكون $\Rightarrow D_f = \emptyset$

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

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$a \in \mathbb{Z} [a] + [-a] \leq 0 \Rightarrow x - \frac{1}{x} \in \mathbb{Z} \Rightarrow D_f = \{x | x = k + \frac{1}{x}, k \in \mathbb{Z}\}$
 ب) $\Rightarrow a \notin \mathbb{Z} [a] + [-a] = -1$

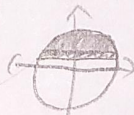
الف) $\sin^2 x - 1 \neq 0 \Rightarrow \sin^2 x \neq 1 \Rightarrow \sin^2 x \neq \frac{1}{x} \Rightarrow \sin x \neq \pm \frac{\sqrt{x}}{x}$
 $\Rightarrow D_f = \mathbb{R} - \left\{ \frac{\pi}{x} + \frac{k\pi}{x} | k \in \mathbb{Z} \right\}$

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ب) $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1 \Rightarrow \frac{\sin x}{\cos x} \neq -1 \Rightarrow \cos x \neq -\sin x$

$D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{x}, k\pi + \frac{2\pi}{x}, k\pi + \pi, k\pi + \frac{3\pi}{x}, k\pi + \frac{4\pi}{x} | k \in \mathbb{Z} \right\}$

الف) $\sin x - 1 \geq 0 \Rightarrow \sin x \geq 1 \Rightarrow \sin x \geq \frac{1}{x} \Rightarrow D_f = \left[k\pi + \frac{\pi}{x}, k\pi + \frac{2\pi}{x} \right] \rightarrow k \in \mathbb{Z}$



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ب) $1 - \cos x \geq 0 \Rightarrow \cos x \leq 1 \Rightarrow \cos x \leq \frac{1}{x}$



$D_f = \left[k\pi + \frac{\pi}{x}, k\pi + \frac{2\pi}{x} \right] \rightarrow k \in \mathbb{Z}$

$k \in \mathbb{Z}$