

الف) $D_f = [-14, 2] \rightarrow D_g = [-14, 2]$

ب) $D_f = [2, 9] \rightarrow D_g = [2, 11]$

الف) $\sqrt{x} > 2x^2 \Rightarrow x > 2x^2 \Rightarrow x > 2x^2 \Rightarrow \sqrt{x} > 2x^2$
 $-\sqrt{2} \leq x \leq \sqrt{2}$

ب) $|x| > 9 \Rightarrow |x| > 9 \Rightarrow |x| > 9 \Rightarrow x > \pm 9$
 $D_f = (-\infty, -9] \cup [9, +\infty)$
 $D_f = [-9, 9]$

الف) $D_f = \mathbb{R} - \{-3, 3\}$ ✓

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ب) $D_f = \mathbb{R} - \{9\}$
 $D_f = [0, +\infty) - \{9\}$

الف) $|x| > 3 \Rightarrow |x| > 3 \Rightarrow \pm 3 > x$

$D_f = [-3, 3]$ ✓

ب) $\frac{-2}{+} \frac{-1}{-} \frac{1}{+} \frac{2}{-} \Rightarrow D_f = [-2, 2] - \{\pm 1\}$
 $D_f = (-\infty, -2] \cup (-1, 1) \cup [2, +\infty)$

$|x| \neq 1 \rightarrow x \neq \pm 1$ $x^2 > 0 \rightarrow -x^2 \leq x$

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

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

الف) $x - [x] > 0 \Rightarrow x > [x] \Rightarrow Df = (-\infty, 3)$ ✓

ب) $x - [x] > 0 \Rightarrow x > [x] \Rightarrow Df = (-\infty, 2)$ ✓

الف) $x[x] > 0 \Rightarrow Df = R^+ \cup R^-$
 $Df = R - \{0\}$

ب) $-x[x] > 0 \Rightarrow x[x] < 0 \Rightarrow Df = \emptyset$ ✓

الف) $[x - \frac{1}{2}] + [x + \frac{1}{2}] \Rightarrow [x + \frac{1}{2} - 1] + [x + \frac{1}{2}] \Rightarrow [x + \frac{1}{2}] - 1 + [x + \frac{1}{2}] > 0 \Rightarrow x > 1 \Rightarrow [x + \frac{1}{2}] > \frac{1}{2}$
 $\Rightarrow Df = [\frac{1}{2}, +\infty)$ ✓

ب) $[x - \frac{1}{2}] + [x + \frac{1}{2}] \geq 0 \Rightarrow [x - \frac{1}{2}] + [-(x - \frac{1}{2})] \Rightarrow x - \frac{1}{2} \in \mathbb{Z}$
 $\Rightarrow Df = \{x \mid x = p + \frac{1}{2}, p \in \mathbb{Z}\} \rightarrow \frac{1}{2}$

~~الف) $\sin^2 x - 1 \neq 0 \Rightarrow \sin^2 x \neq 1 \Rightarrow \sin^2 x \neq \frac{1}{4} \Rightarrow \sin x \neq \pm \sqrt{\frac{1}{4}}$~~
 $Df = R - \{k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}\}$

ب) $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1 \Rightarrow Df = R - \{k\pi + \frac{3\pi}{4}\}$
 $\tan x \neq 0 \quad \cot x \neq 0 \quad Df = R - \{k\pi, k\pi + \frac{\pi}{2}\}$

الف) $x \sin x - 1 > 0 \Rightarrow x \sin x > 1 \Rightarrow \sin x > \frac{1}{x} \Rightarrow Df = [k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}]$
 $Df = [k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}]$

ب) $1 - \cos x > 0 \Rightarrow 1 > \cos x \Rightarrow \frac{1}{2} > \cos x$
 $Df = R - (k\pi - \frac{\pi}{3}, k\pi + \frac{\pi}{3})$