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$$\left. \begin{aligned} -\sqrt{2} \leq x \leq \sqrt{2} \\ x^2 \leq 2 \end{aligned} \right\} D_f = [-\sqrt{2}, \sqrt{2}]$$

$$y = \frac{\sin x + 1}{\sin x - 1} \Rightarrow \left\{ \begin{aligned} \sin x \neq 1 \\ \sin x \neq -1 \end{aligned} \right\} D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2} \right\}$$

الف) $y = \sqrt{4 - 2x^2}$ $0 \leq 4 - 2x^2$ $|x|^2 \leq 2$

ب) $y = \sqrt{3|x| - 9}$ $3|x| - 9 \geq 0$ $|x| \geq 3$ $\left. \begin{aligned} x \geq 3 \\ x \leq -3 \end{aligned} \right\} D_f = (-\infty, -3] \cup [3, +\infty)$

الف) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}}$ $|x|-3 \neq 0$ $|x| \neq 3$ $\left. \begin{aligned} x \neq 3 \\ x \neq -3 \end{aligned} \right\} D_f = \mathbb{R} - \{-3, 3\}$

ب) $y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $x \geq 0$ $\sqrt{x}-3 \neq 0$ $\sqrt{x} \neq 3$ $x \neq 9$ $D_f = [0, +\infty) - \{9\}$

الف) $y = \frac{\sin x}{2\cos x - 1}$ $2\cos x - 1 \neq 0$ $\cos x \neq \frac{1}{2}$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3}\}$

ب) $y = \frac{\cos x + 1}{2\sin x + 1}$ $2\sin x + 1 \neq 0$ $\sin x \neq -\frac{1}{2}$ $D_f = \mathbb{R} - \{k\pi - \frac{\pi}{6}, k\pi + \frac{5\pi}{6}\}$

ج) $y = \frac{\tan x + 1}{\cot x - 1} = \frac{\frac{\sin x}{\cos x} + 1}{\frac{\cos x}{\sin x} - 1}$ $\cos x \neq 0$ $\sin x \neq 0$ $\frac{\cos x}{\sin x} - 1 \neq 0$ $\frac{\cos x}{\sin x} \neq 1$ $\cos x \neq \sin x$ $D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{4}, k\pi + \frac{5\pi}{4}\}$

$y = \frac{1}{\sqrt{|x-1| - \frac{1}{2}}}$ $|x-1| - \frac{1}{2} > 0$ $|x-1| > \frac{1}{2}$ $|x-1| > \frac{1}{2} \Rightarrow \left. \begin{aligned} x-1 > \frac{1}{2} \\ x-1 < -\frac{1}{2} \end{aligned} \right\} \left. \begin{aligned} x > \frac{3}{2} \\ x < \frac{1}{2} \end{aligned} \right\} D_f = (-\infty, \frac{1}{2}) \cup (\frac{3}{2}, +\infty)$

الف) $y = \sqrt{4 - 2|x|}$ $4 - 2|x| \geq 0$ $4 \geq 2|x|$ $|x| \leq 2$ $-2 \leq x \leq 2$ $D_f = [-2, 2]$

ب) $y = \sqrt{\frac{|x|}{|x|+4}}$ $|x| \neq 0$ $\frac{|x|}{|x|+4} \geq 0$ $|x| \geq 0$

$$D_f = \mathbb{R} - \{0\}$$