

الف) $y = \sqrt{1-x|x|} \geq 0 \rightarrow x|x| \leq 1 \rightarrow \begin{cases} x \geq 0 \Rightarrow x^2 \leq 1 \rightarrow 0 \leq x \leq 1 \\ x \leq 0 \Rightarrow 1 \leq x^2 \rightarrow (-\infty, -1] \end{cases}$
 $\rightarrow D_f = (-\infty, -1] \cup [0, 1]$

ب) $\frac{1}{\sqrt{v-|x-\Delta|-1}} \rightarrow \begin{cases} v-|x-\Delta| \neq 1 \rightarrow x \geq 0 / v-x+\Delta \neq 1 \rightarrow x \neq v \\ x \leq 0 / v+x-\Delta \neq 1 \rightarrow x \neq v^* \end{cases} \rightarrow D_f = [v, \Delta] - \{v, v^*\}$
 $\rightarrow \infty = |x-\Delta| \leq v \rightarrow -v \leq x-\Delta \leq v \rightarrow v \leq x \leq \Delta$

الف) $y = \frac{\sin^2 x - 1}{\cos x} \rightarrow \cos x \neq 0 \Rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}\}$

ب) $y = \frac{\cos x}{v \cos x - 1} \rightarrow v \cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{v} \Rightarrow D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{v}\}$

الف) $\frac{x+v}{|x+1|-|x+v|} \rightarrow |x+1| = |x+v| \rightarrow f_x^v + f_x + 1 = x^v + f_x + 9 \rightarrow v x^v - v x - 1 = 0$
 $\Delta = \frac{v \pm 1}{v} = v / \frac{-f}{v} \Rightarrow x + v, \frac{-f}{v} \rightarrow D_f = \mathbb{R} - \{v, \frac{-f}{v}\}$

ب) $|x+1| \geq |x+v| \rightarrow f_x^v + f_x + 1 \geq x^v + f_x + 9 \rightarrow v x^v - v x - 1 \geq 0$
 $\rightarrow D_f = (-\infty, \frac{-f}{v}] \cup [v, +\infty)$

$\log_{\Delta} \log_{\Delta}^{(v x - 1)} \geq 0 \rightarrow \begin{cases} \log_{\Delta}^{(v x - 1)} > 0 \rightarrow v x - 1 > \Delta^0 \rightarrow x > 1 \\ \log_{\Delta}^{(v x - 1)} > 1 \rightarrow v x - 1 > \Delta \rightarrow x > \frac{1}{v} \end{cases}$
 $\rightarrow D_f = (v, +\infty)$

الف) $y = \log(v \cos x + 1) \rightarrow v \cos x + 1 > 0 \rightarrow \cos x > -\frac{1}{v} \Rightarrow D_f = \mathbb{R} - [v k \pi + \frac{v \pi}{v}, v k \pi + \frac{f \pi}{v}]$

ب) $y = \sqrt{\log \frac{x-1}{x+1}} \rightarrow \begin{cases} \frac{x-1}{x+1} > 0 \rightarrow (-\infty, -1) \cup [1, +\infty) \\ \log \frac{x-1}{x+1} > 0 \rightarrow \frac{x-1}{x+1} > 1 \rightarrow \frac{(x-1)-x-1}{x+1} > 0 \rightarrow \frac{-2}{x+1} > 0 \rightarrow x < -1 \end{cases}$
 $\rightarrow D_f = (-\infty, -1)$