

الف) $y = \sqrt{\frac{x^2-6x}{x^2-x}}$ $\Rightarrow \frac{-1 \ 0 \ 1 \ 2}{-x^2+x \ +x^2-x} \Rightarrow D_f = (-1, 0) \cup (0, 1) \cup [2, +\infty)$

ب) $y = \sqrt{\frac{x^2-1}{x^2-x}}$ $\Rightarrow \frac{-1 \ 0 \ 1}{+x^2-x \ +x^2-x} \Rightarrow D_f = \mathbb{R} - \{-1, 0, 1\}$

الف) $y = \frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| > 0 \Rightarrow \begin{cases} x > 0 \Rightarrow x+|x| > 0 \\ x < 0 \Rightarrow x+|x| = 0 \end{cases} \Rightarrow D_f = (0, +\infty)$

ب) $y = \frac{1}{\sqrt{x|x|}} \Rightarrow x|x| > 0 \Rightarrow \begin{cases} x < 0 \Rightarrow x|x| < 0 \\ x > 0 \Rightarrow x|x| > 0 \end{cases} \Rightarrow D_f = (0, +\infty)$

الف) $y = \sqrt{2-[x]} \Rightarrow 2-[x] > 0 \Rightarrow [x] < 2 \Rightarrow x < 2 \Rightarrow D_f = (-\infty, 2)$

ب) $y = \frac{1}{\sqrt{2-[x]}}$ $\Rightarrow 2-[x] > 0 \Rightarrow [x] < 2 \Rightarrow x < 2 \Rightarrow D_f = (-\infty, 2)$

الف) $y = \sqrt{\left[x-\frac{1}{n}\right] + \left[x+\frac{2}{n}\right]} \Rightarrow \left[x-\frac{1}{n}\right] + \left[x+\frac{2}{n}\right] \geq 0 \Rightarrow \left[x+\frac{2}{n}-1\right] + \left[x+\frac{2}{n}\right] \geq 0$
 $\Rightarrow \left[x+\frac{2}{n}\right]-1 + \left[x+\frac{2}{n}\right] \geq 0 \Rightarrow 2\left[x+\frac{2}{n}\right] \geq 1 \Rightarrow \left[x+\frac{2}{n}\right] \geq \frac{1}{2} \Rightarrow x+\frac{2}{n} \geq \frac{1}{2} \Rightarrow x \geq \frac{1}{2}-\frac{2}{n}$
 $D_f = \left[\frac{1}{2}-\frac{2}{n}, +\infty\right)$

ب) $y = \sqrt{\left[x-\frac{1}{n}\right] + \left[-x+\frac{1}{n}\right]} \Rightarrow \begin{cases} x-\frac{1}{n} \in \mathbb{Z} & \left[x-\frac{1}{n}\right] + \left[-x+\frac{1}{n}\right] = 0 \\ x-\frac{1}{n} \notin \mathbb{Z} & \left[x-\frac{1}{n}\right] + \left[-x+\frac{1}{n}\right] = -1 \end{cases} \Rightarrow x-\frac{1}{n} \in \mathbb{Z} \Rightarrow D_f = \left\{x \mid x = k + \frac{1}{n}, k \in \mathbb{Z}\right\}$

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

ب) $y = \frac{2}{2\sin^2 x - 1} \Rightarrow 2\sin^2 x - 1 \neq 0 \Rightarrow \sin^2 x \neq \frac{1}{2} \Rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$
 $\Rightarrow D_f = \mathbb{R} - \left\{\frac{k\pi}{2} + \frac{\pi}{4}, \frac{k\pi}{2} + \frac{3\pi}{4}\right\}$

الف) $y = \sqrt{4\sin x - 1} \Rightarrow 4\sin x - 1 \geq 0 \Rightarrow \sin x \geq \frac{1}{4} \Rightarrow D_f = \left\{ 2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right\}$

ب) $y = \sqrt{\cos x - 1} \Rightarrow \cos x - 1 \geq 0 \Rightarrow \cos x \geq 1 \Rightarrow D_f = \{2k\pi\}$

الف) $Gsy = |x| - 2 \Rightarrow -1 \leq |x - 2| \leq 1 \Rightarrow 1 \leq |x| \leq 3 \Rightarrow \begin{cases} 1 \leq x \leq 3 \\ -3 \leq x \leq -1 \end{cases} \Rightarrow D_f = [-3, -1] \cup [1, 3]$

ب) $y = \arcsin(x^2 + 2x + 1) \rightarrow -1 \leq x^2 + 2x + 1 \leq 1 \Rightarrow x^2 + 2x + 1 \geq -1 \rightarrow x^2 + 2x + 2 \geq 0$
 $\Rightarrow \frac{-2 \pm \sqrt{4 - 4}}{2} = -1 \Rightarrow x^2 + 2x + 1 \leq 1 \Rightarrow x^2 + 2x \leq 0 \Rightarrow \frac{-2 \pm \sqrt{4}}{2} = -1, 0 \Rightarrow D_f = [-1, 0] \cup [1, +\infty)$

الف) $2 - \log_p(x - 2) \geq 0 \Rightarrow \log_p(x - 2) \leq 2 \Rightarrow p^2 \leq x - 2 \Rightarrow 11 \leq x$
 $\Rightarrow D_f = [11, +\infty)$

ب) $x^2 - x > 0 \rightarrow \frac{-1 \pm \sqrt{1}}{2} \rightarrow D_f = (-1, 0) \cup (1, +\infty)$

الف) $f^{x+1} \neq 0 \xrightarrow{\text{log}} D_f = \mathbb{R}$

ب) $f^x - 1 \neq 0 \Rightarrow f^x \neq 1 \Rightarrow x \neq \log_f 1 \Rightarrow D_f = \mathbb{R} - \{\log_f 1\}$

ج) $f^x - 2 \neq 0 \Rightarrow x \neq \log_f 2 \Rightarrow D_f = \mathbb{R} - \{\log_f 2\}$

د) $f^x - 3 \neq 0 \Rightarrow x \neq \log_f 3 \Rightarrow D_f = \mathbb{R} - \{\log_f 3\}$

الف) $y = (f_{n+1})! \rightarrow f_{n+1} \in \mathbb{W} \Rightarrow x \in \frac{W-1}{f} \Rightarrow D_f = \left\{ x \mid x = \frac{k-1}{f}, k \in \mathbb{W} \right\}$

ب) $y = \left(\frac{f_{n-2}}{f_{n-4}} \right)! \rightarrow \frac{f_{n-2}}{f_{n-4}} \in \mathbb{W} \Rightarrow x \in \frac{W-2}{f_{n-4}} \Rightarrow D_f = \left\{ x \mid x = \frac{k-2}{f_{n-4}}, k \in \mathbb{W} \right\}$