

الف) $y = \sqrt{\frac{x^2 - 6x}{x^3 - x}} \rightarrow \sqrt{\frac{x(x-6)}{x(x^2-1)}}$ $\rightarrow D_f = (-1, 0) \cup (0, 1) \cup [6, +\infty)$

ب) $y = \sqrt{\frac{x^5 - x^3}{x^3 - x}} = \sqrt{\frac{x^3(x^2-1)}{x(x^2-1)}}$ $\rightarrow D_f = \mathbb{R} - \{-1, 0, 1\}$

الف) $y = \frac{x+1}{\sqrt{x+|x|}}$ $\rightarrow D_f = (0, +\infty) \quad \underline{D_f = \mathbb{R} - (-\infty, 0]}$

ب) $y = \frac{1}{\sqrt{x|x|}}$ $\rightarrow D_f = (0, +\infty)$

الف) $y = \sqrt{2-[x]}$ $\rightarrow 2-[x] \geq 0 \rightarrow [x] \leq 2 \rightarrow x < 3 \rightarrow D_f = (-\infty, 3)$

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

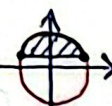
الف) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[x + \frac{y}{x}\right]} \rightarrow \left[x - \frac{1}{x}\right] + \left[x + \frac{y}{x}\right] \geq 0 \rightarrow \left[x + \frac{y}{x} - 1\right] + \left[x + \frac{y}{x}\right] \geq 0$
 $\rightarrow \left[x + \frac{y}{x}\right] - 1 + \left[x + \frac{y}{x}\right] \geq 0 \rightarrow 2\left[x + \frac{y}{x}\right] \geq 1 \rightarrow \left[x + \frac{y}{x}\right] \geq \frac{1}{2} \rightarrow x + \frac{y}{x} \geq 1 \rightarrow x \geq \frac{1}{x}$

ب) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right]} \rightarrow \sqrt{\left[x - \frac{1}{x}\right] + \left[-\left(x - \frac{1}{x}\right)\right]} \rightarrow \begin{cases} a \in \mathbb{Z} \rightarrow [a] + [-a] = 0 \\ a \notin \mathbb{Z} \rightarrow [a] + [-a] = -1 \end{cases}$ $D_f = \left[\frac{1}{x} + \infty\right)$
 $\rightarrow x - \frac{1}{x} \in \mathbb{Z} \rightarrow D_f = \{x | x = k + \frac{1}{x}, k \in \mathbb{Z}\}$

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

ب) $y = \frac{y}{y \sin^2 x - 1} \rightarrow y \sin^2 x - 1 \neq 0 \rightarrow y \sin^2 x \neq 1 \rightarrow \sin^2 x \neq \frac{1}{y} \rightarrow \sin x \neq \pm \frac{1}{\sqrt{y}}$
 $\rightarrow \pm \frac{1}{\sqrt{y}} \xrightarrow{\times \frac{\sqrt{y}}{\sqrt{y}}} \pm \frac{\sqrt{y}}{y}$ $D_f = \mathbb{R} - \left\{\frac{k\pi}{y} + \frac{\pi}{y}\right\}$

الف) $y = \sqrt{2 \sin x - 1} \rightarrow 2 \sin x - 1 \geq 0 \rightarrow 2 \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2}$

 $\rightarrow D_f = [2K\pi + \frac{\pi}{6}, 2K\pi + \frac{5\pi}{6}]$

ب) $y = \sqrt{\cos x - 1} \rightarrow \cos x - 1 \geq 0 \rightarrow \cos x \geq 1$

 $D_f = \{2K\pi\}$

الف) $\cos y = |x| - 3 \rightarrow -1 \leq |x| - 3 \leq 1 \rightarrow 2 \leq |x| \leq 4 \rightarrow \begin{cases} -4 \leq x \leq -2 \\ 2 \leq x \leq 4 \end{cases}$

$\rightarrow D_f = [-4, -2] \cup [2, 4]$

ب) $y = \arcsin(x^2 + 3x + 1) \rightarrow -1 \leq x^2 + 3x + 1 \leq 1$

① $x^2 + 3x + 1 \geq -1 \rightarrow x^2 + 3x + 2 \geq 0 \rightarrow (x+1)(x+2) \geq 0$

② $x^2 + 3x + 1 \leq 1 \rightarrow x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0$

① $\begin{array}{c|ccc} x & -2 & -1 & \\ \hline y & + & - & + \end{array}$

اشتراك او $\rightarrow D_f = [-3, -2] \cup [-1, 0]$

الف) $y = \sqrt{2 - \log_p(x-2)} \rightarrow \begin{cases} x-2 > 0 \rightarrow x > 2 \\ 2 - \log_p(x-2) \geq 0 \rightarrow \log_p(x-2) \leq 2 \rightarrow x-2 \leq 9 \rightarrow x \leq 11 \end{cases}$

اشتراك $\rightarrow D_f = (2, 11]$

ب) $y = \log(x^3 - x) \rightarrow x^3 - x > 0 \rightarrow x(x^2 - 1) > 0$

$\rightarrow D_f = (-1, 0) \cup (1, +\infty)$

الف) $y = \frac{3}{f^x + 1} \rightarrow f^x + 1 \neq 0 \rightarrow f^x \neq -1 \rightarrow D_f = \mathbb{R}$

ب) $y = \frac{3}{f^x - 1} \rightarrow f^x - 1 \neq 0 \rightarrow f^x \neq 1 \rightarrow x \neq 0 \rightarrow D_f = \mathbb{R} - \{0\}$

ج) $y = \frac{3}{f^x - 2} \rightarrow f^x - 2 \neq 0 \rightarrow f^x \neq 2 \rightarrow x \neq \log_f 2 \rightarrow D_f = \mathbb{R} - \{\log_f 2\}$

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

الف) $y = (f^x + 1)! \rightarrow f^x + 1 \in \mathbb{W} \rightarrow f^x \in \mathbb{W} - 1 \rightarrow x \in \frac{\mathbb{W} - 1}{f}$

$\rightarrow D_f = \{x | x = \frac{k-1}{f}, k \in \mathbb{W}\}$

ب) $y = \left(\frac{3x-2}{2x-5}\right)! \rightarrow \frac{3x-2}{2x-5} \in \mathbb{W} \rightarrow 3x-2 \in 2\mathbb{W}x-5\mathbb{W}$

رابطه دوم $\frac{3x-2}{2x-5} \in \mathbb{W} \rightarrow \frac{-5\mathbb{W}-2}{2\mathbb{W}-3}$

$\rightarrow D_f = \{x | x = \frac{5-k}{3-2k}, k \in \mathbb{W}\}$

$\rightarrow 3x-2\mathbb{W}x \in 2\mathbb{W}-5\mathbb{W} \rightarrow \frac{x(3-2\mathbb{W})}{3-2\mathbb{W}} \in \frac{2\mathbb{W}-5\mathbb{W}}{3-2\mathbb{W}}$

$\rightarrow x \in \frac{2-5\mathbb{W}}{3-2\mathbb{W}} \rightarrow D_f = \{x | x = \frac{5-k}{3-2k}, k \in \mathbb{W}\}$