

الف) $y = \sqrt{2 \sin x - 1}$ $\left. \begin{array}{l} 2 \sin x - 1 \geq 0 \\ 2 \sin x \geq 1 \\ \sin x \geq \frac{1}{2} \end{array} \right\} D_f = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \pi - \frac{\pi}{6} \right]$

ب) $y = \sqrt{\cos x - 1}$ $\left. \begin{array}{l} \cos x - 1 \geq 0 \\ \cos x \geq 1 \end{array} \right\} D_f = \{2k\pi\}$ ✓

الف) $\cos y = |x| - 2$ $\left. \begin{array}{l} -1 \leq |x| - 2 \\ |x| - 2 \leq 1 \\ +1 \leq |x| \\ |x| \leq 3 \\ 1 \leq x \leq 3 \\ -3 \leq x \leq -1 \end{array} \right\} D_f = [-3, -1] \cup [1, 3]$

ب) $y = \arcsin(x^2 + 2x + 1)$ $\left. \begin{array}{l} -1 \leq x^2 + 2x + 1 \\ x^2 + 2x + 1 \leq 1 \\ -2 \leq x^2 + 2x \\ x^2 + 2x \leq 0 \\ x(x+2) \leq 0 \\ 0 \leq x \leq -2 \end{array} \right\} D_f = [-2, 0]$

$y = \sqrt{2 - \log_p(x-2)}$ $\left. \begin{array}{l} x-2 \geq 0 \\ x > 2 \\ 2 - \log_p(x-2) \geq 0 \\ \log_p(x-2) \leq 2 \\ x-2 \leq 4 \\ x \leq 6 \end{array} \right\} D_f = (2, 6]$

ب) $y = \log \frac{x^2 - x}{x(x+1)}$ $\left. \begin{array}{l} x(x+1)(x-1) > 0 \\ -1 < x < 1 \end{array} \right\} D_f = (-1, 0) \cup (1, +\infty)$

الف) $y = \frac{2}{x+1}$ $\left. \begin{array}{l} x+1 \neq 0 \\ x \neq -1 \end{array} \right\} D_f = \mathbb{R}$

ب) $y = \frac{2}{x-1}$ $\left. \begin{array}{l} x-1 \neq 0 \\ x \neq 1 \end{array} \right\} D_f = \mathbb{R} - \{1\}$ ✓

ج) $y = \frac{2}{x-2}$ $\left. \begin{array}{l} x-2 \neq 0 \\ x \neq 2 \end{array} \right\} D_f = \mathbb{R} - \{2\}$

د) $y = \frac{2}{x-3}$ $\left. \begin{array}{l} x-3 \neq 0 \\ x \neq 3 \end{array} \right\} D_f = \mathbb{R} - \{3\}$

الف) $y = (fx+1)! \Rightarrow \left. \begin{array}{l} fx+1 \in \mathbb{W} \\ fx \in \mathbb{W}-1 \\ x \in \frac{\mathbb{W}-1}{f} \end{array} \right\} D_f = \left\{ \frac{k-1}{f} \mid k \in \mathbb{W} \right\}$

ب) $y = \left(\frac{x^2-2}{x^2-5} \right)! \Rightarrow \left. \begin{array}{l} \frac{x^2-2}{x^2-5} \in \mathbb{W} \\ x^2-2 \in \mathbb{W} \\ x^2-5 \in \mathbb{W} \end{array} \right\} D_f = \left\{ \frac{k-2}{k-5} \mid k \in \mathbb{W} \right\}$ ✓

$\frac{-x^2\mathbb{W} + x^2\mathbb{W}}{x^2(x^2-5)} \in \mathbb{W} \Rightarrow D_f = \left\{ \frac{k-2}{k-5} \mid k \in \mathbb{W} \right\}$

$x \in \frac{\mathbb{W}-5}{x^2-2}$