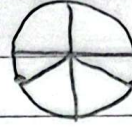


$$\text{الف) } 2 \cos x + 1 \neq 0 \Rightarrow 2 \cos x \neq -1 \Rightarrow \cos x \neq -\frac{1}{2}$$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right\}$$



$$\text{ب) } \cos x - 1 \neq 0 \Rightarrow \cos x \neq 1 \quad P_f = \mathbb{R} - \left\{ 2k\pi + \frac{2\pi}{1} \right\}$$



$$\text{الف) } \tan x + 1 \neq 0 \Rightarrow \tan x \neq -1$$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{3\pi}{4}, 2k\pi + \frac{5\pi}{4} \right\}$$



$$\text{ب) } \cot x - 1 \neq 0 \Rightarrow \cot x \neq 1$$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4} \right\}$$



$$\text{الف) } \sin y = x^2 - 2$$

$$-1 \leq x^2 - 2 \leq 1 \Rightarrow 1 \leq x^2 \leq 3 \Rightarrow \sqrt{1} \leq x \leq \sqrt{3}$$

$$D_f = [1, \sqrt{3}]$$

$$\text{ب) } -1 \leq \sqrt{x} - 2 \leq 1 \Rightarrow 1 \leq \sqrt{x} \leq 3 \Rightarrow D_f = [-4, -2] \cup [2, 4]$$

$$\text{①} \quad \begin{array}{|c|c|c|} \hline - & - & \\ \hline + & 0 & + \\ \hline \end{array}$$

②

$$\begin{array}{|c|c|c|} \hline + & 0 & \\ \hline + & - & + \\ \hline \end{array}$$

$$D_f = \mathbb{I} \cap (\mathbb{I}) \Rightarrow [2, 3] \cup [0, +\infty)$$

$$\text{الف) } -1 \leq |x| - r \leq 1 \Rightarrow r \leq |x| \leq r+1 \Rightarrow D_f = [-r, -r] \cup [r, r] \quad -f$$

$$\text{ب) } -1 \leq x^r + rx + 1 \leq 1 \Rightarrow \begin{cases} x^r + rx + 1 \geq -1 \Rightarrow x^r + rx + 2 \geq 0 \Rightarrow (x+1)(x+r) \geq 0 \\ x^r + rx + 1 \leq 1 \Rightarrow x^r + rx \leq 0 \Rightarrow x(x+r) \leq 0 \end{cases}$$

$$\text{① } \frac{-r}{+d} - \frac{-1}{\phi_+}$$

$$\text{② } \frac{-r}{+d} - \frac{0}{\phi_+}$$

$$D_f = (I) \cap (I \cup I) \Rightarrow [-\infty, -r] \cup [0, +\infty]$$

$$\text{الف) } \begin{cases} x^r - f > 0 \Rightarrow x^r - f > 0 \Rightarrow x^r > f \Rightarrow x > r \\ r > 0 \checkmark \\ r \neq 1 \checkmark \end{cases} \quad D_f = (r, +\infty) \quad -a$$

$$\text{ب) } \begin{cases} r - |x| > 0 \Rightarrow r > |x| \Rightarrow r > x > -r \\ r > 0 \checkmark \\ r \neq 1 \checkmark \end{cases}$$

$$\text{الف) } \omega - x > 0 \Rightarrow -x > -\omega \Rightarrow x < \omega$$

$$x - r > 0 \Rightarrow x > r$$

$$x - r \neq 1 \Rightarrow x \neq r+1$$

$$D_f = (r, \omega) - \{r+1\}$$

$$\text{ب) } x^r - 1 > 0 \Rightarrow x^r > 1 \Rightarrow x > 1, x < -1$$

$$x + r > 0 \Rightarrow x > -r$$

$$x + r \neq 1 \Rightarrow x \neq -r+1$$

$$D_f = (-r, -1) \cup (1, +\infty) - \{-r+1\}$$

$$\text{ا) } \frac{x^2 - 2x + 3}{x-2} = \frac{(x-1)(x-2)}{x-2}$$

-v

$$\begin{array}{c|cc} & 1 & 2 \\ \hline & - & + \end{array}$$

$$D_f = [1, +\infty)$$

$$\text{ب) } \left. \begin{array}{l} \frac{x+2}{x-2} > 0 \quad x > 2 \quad x > -2 \quad x \neq 2 \\ x+2 > 0 \quad x > -2 \\ x+2 \neq 1 \quad x \neq -1 \end{array} \right\} D_f = (-2, +\infty) - \{2, -1\}$$

$$\text{ا) } \sqrt{2 - \log_r(x-2)}$$

-1

$$\left. \begin{array}{l} x-2 > 0 \\ \log_r \frac{x-2}{r} \leq 2 \end{array} \right\} D_f = (2, \infty)$$

$$\text{ب) } \left\{ \begin{array}{l} x > 0 \quad \text{①} \\ r \log_r x - 1 > 0 \rightarrow r \log_r x > 1 \rightarrow \log_r x > \frac{1}{r} \rightarrow x > r^{\frac{1}{r}} = \sqrt[r]{r} \end{array} \right.$$

$$(\sqrt[r]{r}, \infty)$$

الف) $D_f = \mathbb{R}$

ب) $x^2 - 1 \neq 0 \Rightarrow x \neq \pm 1$
 $D_f = \mathbb{R} - \{0\}$

ج) $x^2 \neq 1$
 $D_f = \mathbb{R} - \log \frac{1}{x}$

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د) $x^2 \neq 1$
 $D_f = \mathbb{R} - \{\log \frac{1}{x}\}$

الف) $fx + 1 \in \mathbb{W}$
 $fx \in \mathbb{W} - 1$
 $x \in \frac{\mathbb{W} - 1}{f}$

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

ب) $fx - 1 = f\mathbb{W} - 1 \Rightarrow fx - f\mathbb{W} = 1 - f\mathbb{W}$
 $x = \frac{1 - f\mathbb{W}}{f - f\mathbb{W}}$ $D_f = \{x \mid x = \frac{1 - f\mathbb{W}}{f - f\mathbb{W}}, k \in \mathbb{W}\}$