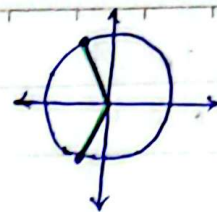


الف) $y = \frac{\sin u - 2}{2 \cos u + 1}$

$2 \cos u + 1 \neq 0$
 $\cos u \neq -\frac{1}{2}$

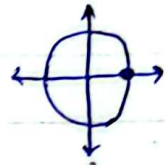


(۱)

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

ب) $y = \frac{\sin u + 3}{\cos u - 1}$

$\cos u - 1 \neq 0 \rightarrow \cos u \neq 1$



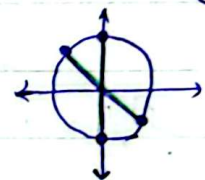
$D_f = R - \{2k\pi\}$



الف) $y = \frac{2 \sin u + 3}{\tan u + 1}$

$\tan u + 1 \neq 0 \rightarrow \tan u \neq -1$

$\tan u = \frac{\sin u}{\cos u} \Rightarrow \cos u \neq 0$



(۲)

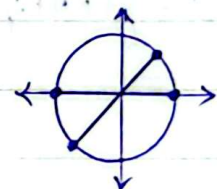
$D_f = R - \left\{ k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right\}$



ب) $y = \frac{\cos u + 1}{\cot u - 1}$

$\cot u - 1 \neq 0 \rightarrow \cot u \neq 1$

$\cot u = \frac{\cos u}{\sin u} \Rightarrow \sin u \neq 0$



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

الف) $\sin y = u^2 - 2$

$-1 \leq u^2 - 2 \leq 1$

$-1 \leq u^2 - 2$

$1 \leq u^2 \rightarrow u^2 \geq 1$

$\begin{matrix} -1 & 1 \\ +\phi & -\phi + \end{matrix} \left| \begin{matrix} u \geq 1 \\ u \leq -1 \end{matrix} \right.$

$u^2 - 2 \leq 1$

$u^2 \leq 3$

$-\sqrt{3} \leq u \leq \sqrt{3}$

$\begin{matrix} -\sqrt{3} & \sqrt{3} \\ +\phi & -\phi + \end{matrix}$

(۳)

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

ب) $y = \arccos(\sqrt{u} - 3)$



$-1 \leq \sqrt{u} - 3 \leq 1$

$-1 \leq \sqrt{u} - 3$

$2 \leq \sqrt{u} \rightarrow u \geq 4$

$\sqrt{u} - 3 \leq 1$

$u \leq 14$

$D_f = [4, 14]$

Hashtag

الف) $\cos y = |u| - 2$

$$-1 \leq |u| - 2 \leq 1$$

(K)

$$-1 \leq |u| - 2$$

$$|u| - 2 \leq 1$$

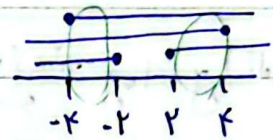
$$2 \leq |u| \rightarrow |u| \geq 2$$

$$\therefore |u| \leq 2$$

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

$$\begin{array}{|c|} \hline u \geq 2 \\ \hline u \leq -2 \\ \hline \end{array}$$

$$-2 \leq u \leq 2$$



Ⓟ ✓

ب) $y = \arcsin(u^2 + 2u + 1)$

$$u^2 + 2u + 1 \leq 1$$

$$u^2 + 2u \leq 0$$

$$u(u + 2) \leq 0$$

$$\begin{array}{|c|} \hline u \leq 0 \\ \hline u \geq -2 \\ \hline \end{array}$$

$$\frac{-2}{+ \phi - \phi +}$$

$$-1 \leq u^2 + 2u + 1 \leq 1$$

$$-1 \leq u^2 + 2u$$

$$u^2 + 2u + 2 \geq 0$$

$$(u+1)(u+2) \geq 0 \rightarrow$$

$$\begin{array}{|c|} \hline u \geq -1 \\ \hline u \geq -2 \\ \hline \end{array}$$

$$\frac{-2}{+ \phi - \phi +}$$

$$D_f = [-2, -2] \cup [-1, 0]$$

الف) $y = \log_p u^2 - 2$

$$u^2 - 2 > 0$$

$$u^2 > 2$$

$$\begin{array}{|c|} \hline u > 2 \\ \hline u < -2 \\ \hline \end{array}$$

$$D_f = (-\infty, -2) \cup (2, +\infty)$$

(A)

Ⓟ ✓

ب) $y = \log_p \frac{2-|u|}{2}$

$$\frac{2-|u|}{2} > 0$$

$$2 > |u| \rightarrow |u| < 2$$

$$-2 < u < 2$$

$$D_f = (-2, 2)$$

الف) $y = \log_{u-2} \frac{\Delta - u}{u-2}$

$$\Delta - u > 0 \rightarrow \Delta > u \rightarrow u < \Delta$$

$$u - 2 > 0 \rightarrow u > 2$$

$$u - 2 \neq 1 \rightarrow u \neq 3$$

$$D_f = (2, \Delta) - \{3\}$$

(4)

✓

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$$ب) y = \log_{u+3} \frac{u^2-1}{u+3}$$

$$u^2 - 1 > 0$$

$$u+3 > 0$$

$$u^2 > 1$$

$$u > -3$$

$$\begin{cases} u > 1 \\ u < -1 \end{cases}$$

$$u+3 \neq 1$$

$$u \neq -2$$

$$D_f = (-2, -1) \cup (-1, -2) \cup (1, +\infty)$$

Ⓟ ✓

$$الف) y = \log \frac{u^2-4u+4}{u-2}$$

$$\frac{u^2-4u+4}{u-2} > 0$$

(✓)

$$(u-1)(u-2) > 0$$

$$D_f = (1, 2) \cup (2, +\infty)$$

$$\begin{cases} u > 1 \\ u > 2 \\ u \neq 2 \end{cases}$$

$$ب) y = \log \frac{u+4}{u-2}$$

$$\frac{u+4}{u-2} > 0$$

$$\begin{cases} u > -4 \\ u \neq 2 \end{cases}$$

Ⓟ ✓

$$u+4 > 0 \rightarrow u > -4$$

$$u+4 \neq 1 \rightarrow u \neq -3$$

$$D_f = (-4, -3) \cup (-3, -4) \cup (-2, +\infty)$$

$$الف) y = \sqrt{3 - \log_r(u-2)}$$

$$u-2 > 0 \rightarrow u > 2$$

(1)

$$3 - \log_r(u-2) \geq 0 \rightarrow \log_r(u-2) \leq 3$$

$$D_f = (2, 10]$$

$$u-2 \leq r^3$$

$$u \leq 10$$

Ⓟ ✓

$$ب) y = \log(2 \log_r^u - 1)$$

$$u > 0$$

$$2 \log_r^u - 1 > 0 \rightarrow \log_r^u > \frac{1}{2}$$

$$D_f = (\sqrt{2}, +\infty)$$

$$u > r^{\frac{1}{2}}$$

$$u > \sqrt{2}$$

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$$الف) y = \frac{x}{x^2+1}$$

$$x^2+1 \neq 0 \rightarrow x^2 \neq -1$$

بما $x \in \mathbb{R}$

$$D_f = \mathbb{R}$$

(9)

$$ب) y = \frac{x}{x^2-1}$$

$$x^2-1 \neq 0$$

$$x^2 \neq 1 \rightarrow x \neq \pm 1$$

$$D_f = \mathbb{R} - \{0\}$$

$$ج) y = \frac{x}{x^2-2}$$

$$x^2-2 \neq 0$$

$$x^2 \neq 2 \rightarrow x \neq \pm \sqrt{2}$$

$$D_f = \mathbb{R} - \{\pm \sqrt{2}\}$$

$$د) y = \frac{x}{x^2-2}$$

$$x^2-2 \neq 0$$

$$x^2 \neq 2 \rightarrow x \neq \pm \sqrt{2}$$

$$D_f = \mathbb{R} - \{\pm \sqrt{2}\}$$

$$الف) y = (x+1)!$$

$$x+1 \in \mathbb{N}$$

$$x \in \mathbb{N}-1$$

$$x \in \frac{n-1}{k}$$

$$D_f = \{n \mid n = \frac{k-1}{k}, k \in \mathbb{N}\}$$

(10)

$$ب) y = \left(\frac{x-2}{x-1} \right)!$$

$$\frac{x-2}{x-1} \in \mathbb{N}$$

$$x-2 \in (x-1)\mathbb{N}$$

$$x - (x-1) \in -\mathbb{N} + 1$$

$$\frac{x(1-1)}{1-1} \in \frac{-\mathbb{N}+1}{1-1} \rightarrow x \in \frac{1-\mathbb{N}}{1-1}$$

$$D_f = \{n \mid n = \frac{1-k}{1-k}, k \in \mathbb{N}\}$$

Hashtag

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