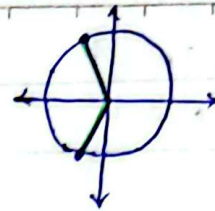


الف) $y = \frac{\sin u - 2}{2 \cos u + 1}$

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

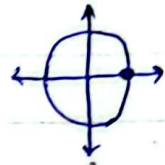


(۱)

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

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

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

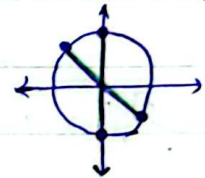


$D_f = R - \{ 2k\pi \}$

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

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

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



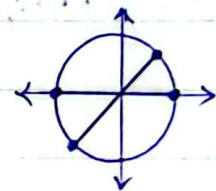
(۲)

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

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) $\sin y = u^2 - 2$

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

$-1 \leq u^2 - 2$

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

$\begin{array}{c} -1 \quad 1 \\ + \phi - \phi + \end{array} \left| \begin{array}{l} u \geq 1 \\ u \leq -1 \end{array} \right|$

$u^2 - 2 \leq 1$

$u^2 \leq 3$

$\begin{array}{c} -\sqrt{3} \quad \sqrt{3} \\ + \phi - \phi + \end{array} \left| \begin{array}{l} -\sqrt{3} \leq u \leq \sqrt{3} \end{array} \right|$

$\begin{array}{c} -\sqrt{3} \quad \sqrt{3} \\ + \phi - \phi + \end{array}$

(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

$$\text{الف) } \cos y = |x| - 2$$

$$-1 \leq |x| - 2 \leq 1$$

(K)

$$-1 \leq |x| - 2$$

$$|x| - 2 \leq 1$$

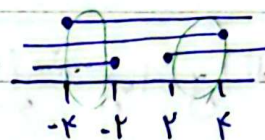
$$2 \leq |x| \rightarrow |x| \geq 2$$

$$\therefore |x| \leq 2$$

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

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

$$-2 \leq x \leq 2$$



$$\text{ب) } y = \arcsin(x^2 + 2x + 1)$$

$$x^2 + 2x + 1 \leq 1$$

$$x^2 + 2x \leq 0$$

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

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

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

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

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

$$x^2 + 2x + 2 \geq 0$$

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

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

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

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

$$\text{الف) } y = \log_p^{x^2-2}$$

$$x^2 - 2 > 0$$

$$x^2 > 2$$

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

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

(A)

$$\text{ب) } y = \log_p^{2-|x|}$$

$$2 - |x| > 0$$

$$2 > |x| \rightarrow |x| < 2$$

$$-2 < x < 2$$

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

$$\text{الف) } y = \log_{x-2}^{\Delta-x}$$

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

$$x - 2 > 0 \rightarrow x > 2$$

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

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

(4)

Hashtag

H A S H T A G

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

$$u^r - 1 > 0$$

$$u+r > 0$$

$$u^r > 1$$

$$u > -r$$

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

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

$$u+r \neq 1$$

$$u \neq -r$$

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

$$\frac{u^r - r u + r}{u-r} > 0$$

(✓)

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

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

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

$$ب) y = \log \frac{u+r}{u-r}$$

$$\frac{u+r}{u-r} > 0$$

$$\begin{cases} u > -r \\ u \neq r \end{cases}$$

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

$$u+r \neq 1 \rightarrow u \neq -r$$

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

$$الف) y = \sqrt{r - \log_r(u-r)}$$

$$u-r > 0 \rightarrow u > r$$

(1)

$$r - \log_r(u-r) \geq 0 \rightarrow \log_r(u-r) \leq r$$

$$D_f = (r, 10]$$

$$u-r \leq r^r$$

$$u \leq 10$$

$$ب) y = \log(r \log_r^n - 1)$$

$$u > 0$$

$$r \log_r^n - 1 > 0 \rightarrow \log_r^n > \frac{1}{r}$$

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

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

$$u > \sqrt{r}$$

Hashtag

$$الف) y = \frac{x}{x^2+1}$$

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

بما $x \in \mathbb{R}$

$$D_f = \mathbb{R}$$

(9)

$$ب) y = \frac{x}{x^2-1}$$

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

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

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

$$ج) y = \frac{x}{x^2-2}$$

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

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

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

$$د) y = \frac{x}{x^2-x}$$

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

$$x^2 \neq x \rightarrow x \neq \log_x^x$$

$$D_f = \mathbb{R} - \{\log_x^x\}$$

$$الف) y = (x_{n+1})!$$

$$x_{n+1} \in \mathbb{N}$$

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

$$n \in \frac{\mathbb{N}-1}{k}$$

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

(10)

$$ب) y = \left(\frac{x_n - x}{x_n - a} \right)!$$

$$\frac{x_n - x}{x_n - a} \in \mathbb{N}$$

$$x_n - x \in x_n \mathbb{N} - a \mathbb{N}$$

$$x_n - x_n \mathbb{N} \in -a \mathbb{N} + x$$

$$\frac{n(x - x_n)}{x - x_n} \in \frac{-a \mathbb{N} + x}{x - x_n} \rightarrow n \in \frac{x - a \mathbb{N}}{x - x_n}$$

$$D_f = \{n \mid n = \frac{x - a \mathbb{N}}{x - x_n}, k \in \mathbb{N}\}$$

Hashtag

H A S H T A G