

الف) $\frac{x+3}{2x^3 + 2x^2 - 11x + 3} = \frac{x+3}{(x-1)(2x-1)(x+3)} \Rightarrow (x+3)(x-1)(2x-1) \neq 0$

$\Rightarrow x \neq -3, 1, \frac{1}{2} \Rightarrow D_f = \mathbb{R} - \left\{1, \frac{1}{2}, -3\right\}$

ب) $\frac{x+3}{2x^3 + 9x^2 + 10x + 3} = \frac{x+3}{(x+1)(2x+1)(x+3)} \Rightarrow (x+1)(2x+1)(x+3) \neq 0$

$\Rightarrow x \neq -1, -\frac{1}{2}, -3 \Rightarrow D_f = \mathbb{R} - \left\{-\frac{1}{2}, -1, -3\right\}$

الف) $\frac{x+3}{x^3 - 2x^2 + 2x - 1} = \frac{x+3}{(x-1)(x^2 - x + 1)} \Rightarrow D_f = \mathbb{R} - \left\{1\right\}$

صواب $\oplus$ انت
ورقة زائد

ب) $\sqrt{\frac{x+3}{x^3 - 2x^2 + 2x - 1}} = \sqrt{\frac{x+3}{(x-1)(x^2 - x + 1)}} \Rightarrow \frac{-3}{+0} - \frac{1}{0+}$

$\oplus$ صواب

$D_f = (-\infty, -3] \cup (1, +\infty)$

الف) $x \geq 1 \rightarrow x^2 - 2x + 1 = x^2 - 2x + 1 = (x-1)^2 \Rightarrow x \neq 1, 0$

ب) $x < 1 \rightarrow x^2 - 2x + 1 = x^2 - 2x + 1 = x(x-2) \Rightarrow x \neq 0, -3$

$\Rightarrow D_f = \mathbb{R} - \{1, 0, -3\}$

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

$$b) y = \frac{2x^2 + 9}{[x]^2 - 2[x] - 3} \rightarrow ([x] - 3)([x] + 1) \neq 0 \rightarrow [x] \neq -1 \rightarrow x \neq [-1, 0)$$

$$\Rightarrow D_f = \mathbb{R} - ([-1, 0) \cup [3, 4))$$

$$a) \Rightarrow y = \sqrt{[x-1+\frac{1}{x}] + [x+\frac{1}{x}]} \Rightarrow 2[x+\frac{1}{x}] - 1 \geq 0$$

$$\rightarrow [x+\frac{1}{x}] \geq \frac{1}{2} \rightarrow [x+\frac{1}{x}] \geq 1 \rightarrow x+\frac{1}{x} \geq 1 \rightarrow x \geq \frac{1}{x} \rightarrow D_f = [\frac{1}{x}, +\infty)$$

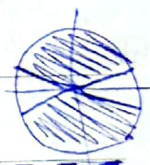
$$b) \Rightarrow y = \sqrt{[x-\frac{1}{x}] + [-(x-\frac{1}{x})]} \rightarrow \begin{cases} x \in \mathbb{Z} \rightarrow [a] + [-a] = 0 \quad \checkmark \\ x \notin \mathbb{Z} \rightarrow [a] + [-a] = -1 \quad \times \end{cases}$$

$$\Rightarrow -\frac{1}{x} + x \in \mathbb{Z} \Rightarrow x \in \mathbb{Z} + \frac{1}{x} \rightarrow D_f = \{x \mid x = k + \frac{1}{x}, k \in \mathbb{Z}\}$$

$$a) y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \begin{matrix} \sin x \neq 0 \\ \cos x \neq 0 \\ \tan x \neq -1 \end{matrix} \rightarrow \begin{matrix} \text{Unit Circle Diagram} \end{matrix} \rightarrow D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi - \frac{\pi}{4} \right\}$$

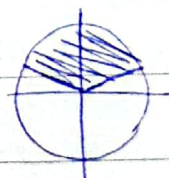
$$b) y = \sqrt{1 - 4\sin^2 x} \rightarrow 1 - 4\sin^2 x \geq 0 \rightarrow 1 \geq 4\sin^2 x \rightarrow \sin^2 x \leq \frac{1}{4} \rightarrow |\sin x| \leq \frac{1}{2}$$

$$\Rightarrow D_f = \left[k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6} \right]$$

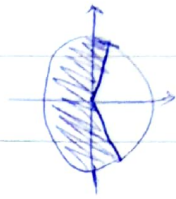


$$a) y = \sqrt{4\sin^2 x - 1} \rightarrow 4\sin^2 x - 1 \geq 0 \rightarrow \sin^2 x \geq \frac{1}{4} \rightarrow |\sin x| \geq \frac{1}{2}$$

$$\Rightarrow D_f = \left[k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6} \right] \cup \left[k\pi + \frac{3\pi}{2}, k\pi + \frac{7\pi}{6} \right]$$



ب) $y = \sqrt{1 - r \cos x} \rightarrow 1 - r \cos x \geq 0 \rightarrow r \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{r}$
 $\Rightarrow D_f = \left[r k \pi + \frac{\pi}{r}, r k \pi + \frac{\Delta \pi}{r} \right]$



ا) $y = \arcsin(x^r + r_{n+1}) \Rightarrow -1 \leq x^r + r_{n+1} \leq 1$
 $\rightarrow \begin{cases} -1 \leq x^r + r_{n+1} \rightarrow x^r + r_{n+1} \geq 0 \rightarrow (x+1)(x+r) \geq 0 \rightarrow \begin{matrix} - & - & + \\ + & - & + \end{matrix} \\ x^r + r_{n+1} \leq 1 \rightarrow x(x+r) \leq 0 \rightarrow \begin{matrix} & & r \\ + & - & + \end{matrix} \end{cases}$

$\xrightarrow{n} D_f = [-r, -1] \cup [-1, 0]$

ب) $\cos y = \sqrt{\Delta - r x} \rightarrow 0 \leq \Delta - r x \leq 1 \rightarrow -\Delta \leq -r x \leq -r \rightarrow \Delta \geq r x \geq r$
 $\rightarrow r, \Delta \geq x \geq r \Rightarrow D_f = [r, r, \Delta]$

ا) $y = \log_p \left(1 - \log_r x \right) \rightarrow \begin{cases} x > 0 \\ 1 - \log_r x > 0 \rightarrow \log_r x < 1 \rightarrow x < r \end{cases}$

$\xrightarrow{n} D_f = (0, r)$

ب) $y = \log_r \left(1 - \log_{\frac{1}{r}} x \right) \rightarrow \begin{cases} x > 0 \\ 1 - \log_{\frac{1}{r}} x > 0 \rightarrow \log_{\frac{1}{r}} x < 1 \rightarrow x < \frac{1}{r} \end{cases} \xrightarrow{n} D_f = (0, \frac{1}{r})$

ا) $y = \sqrt{r^{x-x^r}} - 1 \rightarrow r^{x-x^r} \geq 1 \rightarrow x - x^r \geq 0 \rightarrow x + r_{n-3} \geq 0$
 $\rightarrow x^r - r + r \leq 0 \rightarrow (x-1)/(x-r) \leq 0 \rightarrow \begin{matrix} & & r \\ + & - & + \end{matrix} \rightarrow D_f = [1, r]$

ب) $y = \left(\frac{r_{n+\Delta}}{r_{n+r}} \right)! \rightarrow \frac{r_{n+\Delta}}{r_{n+r}} \in \mathbb{W} \rightarrow x = \frac{(r_{n+\Delta})}{r_{n+r}} \rightarrow D_f = \left\{ x \mid x \leq \frac{r_{n+\Delta}}{r_{n+r}} \right\}$