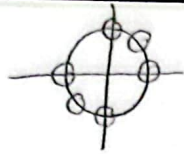


الف) $y = \frac{x+3}{2x^3+3x^2-11x+3} = \frac{x+3}{(x-1)(2x-1)(x+3)}$ $x \neq 1, \frac{1}{2}, -3$ $D_f = \mathbb{R} - \{1, \frac{1}{2}, -3\}$	ب) $y = \frac{-x+3}{2x^3+9x^2+11x+3} = \frac{x+3}{(x+1)(x+3)(2x+1)}$ $x \neq -1, -3, -\frac{1}{2}$ $D_f = \mathbb{R} - \{-1, -3, -\frac{1}{2}\}$
الف) $y = \frac{x+3}{x^3-2x^2+2x-1} = \frac{x+3}{(x-1)(x^2-x+1)}$ $x \neq 1$ $D_f = \mathbb{R} - \{1\}$	ب) $y = \sqrt{\frac{x+3}{x^3-2x^2+2x-1}} = \sqrt{\frac{x+3}{(x-1)(x^2-x+1)}}$ $\frac{-3}{+0} - \frac{1}{0} +$ $D_f = (-\infty, -1) \cup (1, +\infty)$
$y = \frac{2}{x^2-5 x-1 -2x+6}$ $\frac{1}{ x-1 }$ $\frac{x^2+3x}{x^2-5 x-1 -2x+6}$	عدد کسرها را $x^2+3x=0 \Rightarrow x(x+3) \rightarrow x=0, -3 \rightarrow$ عدد کسرها را $x^2-5 x-1 -2x+6=0 \Rightarrow (x-2)(x-3)=0 \Rightarrow x=2, 3 \rightarrow$ $D_f = \mathbb{R} - \{-3, 0, 2, 3\}$
الف) $y = \sqrt{[-x]-2}$ $[-x]-2 \geq 0 \Rightarrow [-x] \geq 2 \Rightarrow -x \geq 2$ $x \leq -2$ $D_f = (-\infty, -2]$	ب) $y = \frac{5x^2+4}{[x]^2-2[x]-2} = \frac{5x^2+4}{([x]-3)([x]+1)}$ $[x] \neq 3 \Rightarrow x \neq [3, 4)$ $[x] \neq -1 \Rightarrow x \neq [-1, 0)$ $D_f = \mathbb{R} - [3, 4) \cup [-1, 0)$
الف) $y = \sqrt{[x-\frac{1}{3}]+[x+\frac{2}{3}]} = \sqrt{[x-\frac{1}{3}]+[x-\frac{1}{3}+1]}$ $\Rightarrow \sqrt{2[x-\frac{1}{3}]+1}$ $2[x-\frac{1}{3}]+1 \geq 0$ $2[x-\frac{1}{3}] \geq -1$ $[x-\frac{1}{3}] \geq -\frac{1}{2}$ $x-\frac{1}{3} \geq 0$ $x \geq \frac{1}{3}$ $D_f = [\frac{1}{3}, +\infty)$	ب) $y = \sqrt{[x-\frac{1}{3}]+[\frac{1}{3}-x]} \Rightarrow \sqrt{[+]+[-]}$ $t \in \mathbb{Z} \Rightarrow [t]+[t]=0 \checkmark$ $t \notin \mathbb{Z} \Rightarrow [t]+[t]=-1 \times$ $x-\frac{1}{3} \in \mathbb{Z} \rightarrow D_f = \{x x=k+\frac{1}{3}, k \in \mathbb{Z}\}$

$$\text{الف)} y = \frac{\cot x + 1}{\tan x + 1}$$

$$\tan x \neq -1 \Rightarrow x \neq k\pi + \frac{3\pi}{4}$$

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

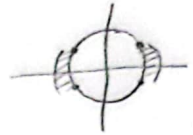


$$\text{ب)} y = \sqrt{1 - \sin^2 x}$$

$$1 - \sin^2 x \geq 0 \quad 1 \geq \sin^2 x$$

$$\sin^2 x \leq 1 \quad -\frac{1}{1} \leq \sin x \leq \frac{1}{1}$$

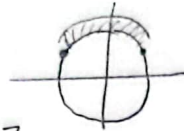
$$D_f = \left[k\pi - \frac{\pi}{2}, k\pi + \frac{\pi}{2} \right]$$



$$\text{الف)} y = \sqrt{r \sin x - 1} \quad r \sin x - 1 \geq 0$$

$$r \sin x \geq 1 \quad \sin x \geq \frac{1}{r}$$

$$D_f = \left[rk\pi + \frac{\pi}{2}, rk\pi + \frac{\omega\pi}{r} \right]$$



$$\text{ب)} y = \sqrt{1 - r \cos x} \quad 1 - r \cos x \geq 0$$

$$1 \geq r \cos x \quad \cos x \leq \frac{1}{r}$$

$$D_f = \left[rk\pi + \frac{\pi}{r}, rk\pi + \frac{\omega\pi}{r} \right]$$



$$\text{الف)} y = \arcsin(x^2 + rx + 1) \quad -1 \leq x^2 + rx + 1 \leq 1$$

$$0 \leq x^2 + rx + 1 \leq 1 \Rightarrow 0 \leq (x+1)(x+r) \leq 1$$

$$\begin{array}{c} -r \\ + \end{array} \quad \begin{array}{c} -1 \\ + \end{array}$$

$$0 \leq x^2 + rx + 1 \Rightarrow x(x+r) \geq 0$$

$$\begin{array}{c} -r \\ + \end{array} \quad \begin{array}{c} 0 \\ + \end{array}$$

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

$$\text{ب)} \cos y = \sqrt{\omega - rx}$$

$$x = \frac{1}{\omega} \rightarrow \cos y = 0 \Rightarrow y = 90^\circ, 270^\circ, \dots$$

تابع نیست $\leftarrow$ مثل مثال های قبله ...
بافرض تابع بودن سوال داده سه است نه دانه! معنی اینست
درماتر اینجا ی C.D. داریم! Arc Cos فرقی ندارد

$$-1 \leq \sqrt{\omega - rx} \leq 1 \rightarrow \omega - rx \leq 1 \rightarrow rx \geq \omega - 1$$

$$\omega - rx \geq 0 \rightarrow rx \leq \omega$$

$$\text{الف)} y = \log_r(1 - \log_r x) \quad x > 0$$

$$1 - \log_r x > 0 \quad 1 > \log_r x$$

$$r^1 > x \Rightarrow x < r$$

$$D_f = (0, r)$$

$$\text{ب)} y = \log_r(1 - \log_r \frac{x}{r}) \quad x > 0$$

$$1 - \log_r \frac{x}{r} > 0 \quad 1 > \log_r \frac{x}{r}$$

$$\frac{1}{r} < x \quad x > \frac{1}{r}$$

$$D_f = \left(\frac{1}{r}, r + \infty \right)$$

$$\text{الف)} y = \sqrt[r]{x - x^r} \quad r^{x - x^r} - 1 \geq 0$$

$$r^{x - x^r} \geq r^0 \rightarrow x - x^r \geq 0$$

$$x^r - x + r \leq 0 \rightarrow (x-1)(x-r) \leq 0$$

$$\begin{array}{c} 1 \\ + \end{array} \quad \begin{array}{c} r \\ + \end{array}$$

$$D_f = [1, r]$$

$$y = \left(\frac{r^x + \omega}{r^x + r} \right)! \quad \frac{r^x + \omega}{r^x + r} \in \mathbb{W}$$

$$r^x + \omega = r^x + r \quad r^x - r^x = r - \omega = 0$$

$$x(r - r^x) = r - \omega \quad x = \frac{r - \omega}{r - r^x}$$

$$D_f = \left\{ x \mid x = \frac{r - \omega}{r - r^x}, k \in \mathbb{W} \right\}$$

$$1- \text{ب.} \quad \sqrt{\omega - rn} \rightarrow \omega - rn \geq 0 \rightarrow n \leq \frac{\omega}{r}$$

$$\xrightarrow{1} \text{Def. } \left[r, \frac{\omega}{r} \right]$$

$$\underbrace{-1}_{\text{همواره برقرار است}} \leq \sqrt{\omega - rn} \leq 1 \rightarrow \omega - rn \leq 1 \rightarrow -rn \leq -L \rightarrow n \geq r$$

همواره برقرار است ✓