

$$الف) y = \frac{x+3}{x^2 + 4x^2 - 12x + 4}$$

محل کاغذ است پس را -1 کسب می‌دهد

$$\begin{array}{r} x^2 + 4x^2 - 12x + 4 \quad | \quad x-1 \\ -x^2 + 4x^2 \\ \hline 3x^2 - 12x + 4 \\ -3x^2 + 12x - 3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} x^2 + 4x^2 - 12x + 4 \\ -x^2 + 4x^2 \\ \hline 3x^2 - 12x + 4 \\ -3x^2 + 12x - 3 \\ \hline 7 \end{array}$$

$$D = \mathbb{R} - \left\{ \frac{1}{3}, -\frac{1}{3}, 1 \right\}$$

$$ب) y = \frac{x+3}{x^2 + 9x^2 + 12x + 4}$$

محل کاغذ است پس را -1 کسب می‌دهد

$$\begin{array}{r} x^2 + 9x^2 + 12x + 4 \quad | \quad x+1 \\ -x^2 + 9x^2 + 12x + 4 \\ \hline 8x^2 + 12x + 4 \\ -8x^2 - 8x - 8 \\ \hline 20x + 12 \end{array}$$

$$\begin{array}{r} x^2 + 9x^2 + 12x + 4 \\ -x^2 + 9x^2 + 12x + 4 \\ \hline 8x^2 + 12x + 4 \\ -8x^2 - 8x - 8 \\ \hline 20x + 12 \end{array}$$

$$D = \mathbb{R} - \left\{ -1, -\frac{1}{3}, -\frac{1}{4} \right\}$$

$$الف) y = \frac{x+3}{x^2 - 4x^2 + 4x - 1}$$

محل کاغذ است پس را -1 کسب می‌دهد

$$\begin{array}{r} x^2 - 4x^2 + 4x - 1 \quad | \quad x-1 \\ -x^2 + 4x^2 + 4x - 1 \\ \hline 3x^2 + 4x - 1 \\ -3x^2 + 3x - 3 \\ \hline 7x - 4 \end{array}$$

$$D = \mathbb{R} - \{1\}$$

$$ب) y = \sqrt{\frac{x+3}{x^2 - 4x^2 + 4x - 1}}$$

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

$$\begin{array}{l} x > 1 \Rightarrow |x-1| = x-1 \Rightarrow x^2 - 4x^2 + 4x - 1 = 0 \\ x^2 - 4x^2 + 4x - 1 = 0 \Rightarrow (x-1)(x-4) = 0 \\ x = 1 \text{ or } x = 4 \end{array}$$

$$y = \frac{y}{x^2 - 4|x-1| - 4x + 4}$$

$$D_f = \mathbb{R} - \{-3, 4\}$$

$$الف) y = \sqrt{[-x] - 1}$$

$$[-x] \geq 1$$

$$-x \geq 1 \Rightarrow x \leq -1$$

$$D_f = (-\infty, -1]$$

$$ب) y = \frac{2x^2 + 4}{[x]^2 - 2[x] - 3}$$

$$([x] - 3)([x] + 1)$$

$$\begin{array}{l} [x] = 3 \Rightarrow 3 \leq x < 4 \\ [x] = -1 \Rightarrow -1 \leq x < 0 \end{array}$$

$$D_f = (-\infty, -1) \cup [0, 3) \cup [4, +\infty)$$

$$الف) y = \sqrt{\left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right]}$$

$$\left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right] \geq 0 \Rightarrow \left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x} - \frac{1}{x}\right] \geq 0 \Rightarrow \left[x - \frac{1}{x}\right] + \left[x - \frac{1}{x} + 1\right] \geq 0$$

$$2\left[x - \frac{1}{x}\right] \geq -1 \quad \left[x - \frac{1}{x}\right] \geq -\frac{1}{2} \Rightarrow x - \frac{1}{x} \geq 0 \quad x > \frac{1}{x} \quad D_f = \left[\frac{1}{2}, +\infty\right)$$

$$ب) y = \sqrt{\left[x - \frac{1}{x}\right] + \left[\frac{1}{x} - x\right]}$$

$$\left[x - \frac{1}{x}\right] + \left[\frac{1}{x} - x\right] \geq 0 \Rightarrow \left[x - \frac{1}{x}\right] + \left[-\left(x - \frac{1}{x}\right)\right] \geq 0 \Rightarrow \begin{cases} a \in \mathbb{Z} [a] \cdot [-a] = 0 \\ a \in \mathbb{Z} [a] \cdot [-a] = 1 \end{cases}$$

$$D_f = \{x | x = k + \frac{1}{k}, k \in \mathbb{Z}\}$$

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

$\tan x + 1 \neq 0$
 $\cos x \neq -1$



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

cobu stann باير تقيف مقرر

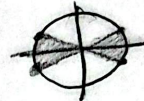
1,8

ب) $y = \sqrt{1 - \sqrt{5} \sin x}$

$1 - \sqrt{5} \sin x \geq 0$

$\sin x \leq \frac{1}{\sqrt{5}}$

$|\sin x| \leq \frac{1}{\sqrt{5}}$

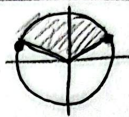


$D_f = \left[k\pi + \frac{\pi}{9}, k\pi + \frac{7\pi}{9} \right]$
 $k \in \mathbb{Z}$

الف) $y = \sqrt{\sqrt{5} \sin x - 1}$

$\sqrt{5} \sin x - 1 \geq 0$

$\sin x \geq \frac{1}{\sqrt{5}}$



$D_f = \left[k\pi + \frac{\pi}{9}, k\pi + \frac{7\pi}{9} \right]$
 $k \in \mathbb{Z}$

ب) $y = \sqrt{1 - \sqrt{5} \cos x}$

$1 - \sqrt{5} \cos x \geq 0$

$\cos x \leq \frac{1}{\sqrt{5}}$



$D_f = \left[k\pi + \frac{\pi}{9}, k\pi + \frac{4\pi}{9} \right]$
 $k \in \mathbb{Z}$

الف) $y = \arcsin(x^2 + \sqrt{x} + 1)$

$-1 \leq x^2 + \sqrt{x} + 1 \leq 1$

$\begin{cases} x^2 + \sqrt{x} + 1 \geq -1 \\ x^2 + \sqrt{x} + 1 \leq 1 \end{cases} \Rightarrow \begin{cases} x^2 + \sqrt{x} + 2 \geq 0 \\ x^2 + \sqrt{x} \leq 0 \end{cases} \quad (I)$

$\begin{cases} x^2 + \sqrt{x} + 1 \leq 1 \\ x^2 + \sqrt{x} \leq 0 \end{cases} \Rightarrow \begin{cases} x^2 + \sqrt{x} \leq 0 \\ x^2 + \sqrt{x} \leq 0 \end{cases} \quad (II)$

$D_f = [-\frac{1}{9}, -\frac{1}{2}] \cup [-1, 0]$

ب) $\cos y = \sqrt{2 - \sqrt{x}}$

$\begin{cases} 2 - \sqrt{x} \geq 0 \\ -1 \leq \sqrt{2 - \sqrt{x}} \leq 1 \end{cases} \Rightarrow \begin{cases} x \leq \frac{4}{9} \\ 2 - \sqrt{x} \leq 1 \end{cases}$

$2 - \sqrt{x} \leq 1 \Rightarrow \sqrt{x} \geq 1 \Rightarrow x \geq 1$

$D_f = \left[\frac{1}{9}, \frac{4}{9} \right]$

الف) $y = \deg_p (1 - \deg_p^x)$

$\begin{cases} x > 0 \\ 1 - \deg_p^x > 0 \end{cases}$

$\deg_p^x < 1$

$x < p$

$D_f = (0, p)$

ب) $\deg_p (1 - \deg_p^{\frac{x}{p}})$

$\begin{cases} x > 0 \\ 1 - \deg_p^{\frac{x}{p}} > 0 \end{cases}$

منبئين هدا ايت
 $\deg_p^{\frac{x}{p}} < 1$
 $\frac{x}{p} < 1$
 $x < p$

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

الف) $y = \sqrt{\frac{px - x^2}{p} - 1}$

$\frac{px - x^2}{p} - 1 \geq 0$

$px - x^2 \geq p$

$-x^2 + px - p \geq 0$

$(x+1)(x+p) \geq 0$

$D_f = [1, p]$

ب) $y = \left(\frac{px + d}{px + f} \right)!$

$\frac{px + d}{px + f} \in \mathbb{W} \Rightarrow px + d \in p\mathbb{W}x + f\mathbb{W}$

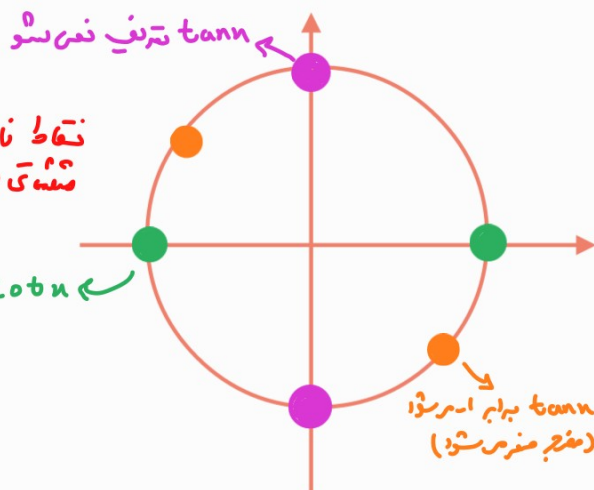
$px - p\mathbb{W}x \in -d + f\mathbb{W} \Rightarrow x \in \frac{-f\mathbb{W} - d}{p - p\mathbb{W}}$

$D_f = \left\{ x \mid x = \frac{fk - d}{-pk + p}, k \in \mathbb{W} \right\}$

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

نقاط نامعلوم را در دایره
مستوی مشخص میکنیم.

$\cot x$ تقریب نمیشود



$x \neq k\pi + \frac{\pi}{2}$

$x \neq k\pi + \frac{\pi}{2} \cup x \neq k\pi$

$\rightarrow x \neq \frac{k\pi}{2}$

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

ب) $y = \log_2 (1 - \log_{\frac{1}{2}} \frac{1}{x})$ $\rightarrow \log_{\frac{1}{2}} \frac{1}{x} \rightarrow x > 0$

$\rightarrow 1 - \log_{\frac{1}{2}} \frac{1}{x} > 0 \rightarrow \log_{\frac{1}{2}} \frac{1}{x} < 1$ ^{منابعین (در 1)} $\rightarrow x > \frac{1}{2}$

$D_f = (\frac{1}{2}, +\infty)$