

الف) $y = \frac{x+3}{x^2+x^2-10x+3} = \frac{x+3}{(x-1)(x+3)(x-1)}$
 $DF = R - \{1, 3, -3\}$

ب) $y = \frac{x+3}{x^2+x^2-10x+3} = \frac{x+3}{(x+1)(x+3)(x-1)}$
 $DF = R - \{-1, -3, -\frac{1}{3}\}$

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

ب) $y = \sqrt{\frac{x+3}{x^2-2x^2+2x-1}} = \sqrt{\frac{x+3}{(x-1)(x^2-x+1)}}$
 $DF = R - \{3, 1\} \text{ or } (-\infty, -3) \cup (1, +\infty)$

$y = \frac{r}{x^2-5|x-1|-2x+5}$
 $x-1 \geq 0 \Rightarrow x \geq 1 \rightarrow \frac{r}{x^2-5x+5-2x+5} = \frac{r}{x^2-7x+10} = \frac{r}{(x-2)(x-5)}$

$x-1 < 0 \Rightarrow x < 1 \rightarrow \frac{r}{x^2-5(-x-1)-2x+5} = \frac{r}{x^2+3x-5}$
 $DF = R - \{0, 2, 5, -3\}$

$y = \sqrt{[-x] \cdot 2} \Rightarrow [-x] \geq 2 \rightarrow x \in (-\infty, -2]$

$y = \frac{5x^2+7}{(x)^2-2(x)-2} = \frac{5x^2+7}{(x-3)(x+1)}$
 $DF = R - \{[-1, 0) \cup [2, 4)\}$

$y = \sqrt{[x - \frac{1}{x}][x + \frac{r}{x}]} \Rightarrow [x - \frac{1}{x}][x + \frac{r}{x}] \geq 0 \xrightarrow{+1} r[x + \frac{r}{x}] \geq 1$
 $[x + \frac{r}{x}] \geq \frac{1}{r}$

$y = \sqrt{[x - \frac{1}{x}][\frac{1}{x} - x]} \Rightarrow [x - \frac{1}{x}][\frac{1}{x} - x] \geq 0$
 $DF = [\frac{1}{x}, +\infty)$

$\hookrightarrow \frac{a}{[x] + (-x)} \Rightarrow a \in \mathbb{Z} \rightarrow x - \frac{1}{x} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{x}$
 $DF = \{x | x = k + \frac{1}{x}, k \in \mathbb{Z}\}$

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

$$\textcircled{1} \tan x + 1 = 0$$

$$\tan x = -1$$

$$\textcircled{2} \tan x, \cot x \text{ تعریف نشده}$$



$x \in \mathbb{R}$

الان نقاطی که نقطه نامیده می شود!

$$\text{ب) } y = \sqrt{1 - f \sin^2 x} \rightarrow$$

$$1 \geq f \sin^2 x$$

$$\frac{1}{f} \geq \sin^2 x \rightarrow -\frac{1}{f} \leq \sin x \leq \frac{1}{f}$$



(1, 1/2)

بازه راست بنویس!

$$Df = \left\{ k\pi \pm \frac{\pi}{f} \right\} \quad \left[k\pi - \frac{\pi}{f}, k\pi + \frac{\pi}{f} \right]$$

$$\text{الف) } y = \sqrt{r \sin x} - 1 \Rightarrow r \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{r}$$



$$Df = \left[r k \pi + \frac{\pi}{r}, r k \pi + \frac{\pi}{r} \right]$$

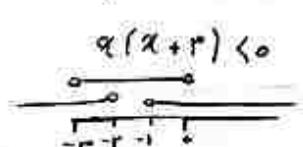
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$$\text{ب) } y = \sqrt{1 - r \cos x} \Rightarrow 1 - r \cos x \geq 0 \rightarrow \cos x \leq \frac{1}{r}$$



$$Df = \left(r k \pi + \frac{\pi}{r}, r k \pi + \frac{\pi}{r} \right) \text{ or } R - \left(r k \pi + \frac{\pi}{r}, r k \pi + \frac{\pi}{r} \right)$$

$$\text{الف) } y = \arcsin(x^2 + 3x + 1) \rightarrow -1 \leq x^2 + 3x + 1 \leq 1$$



$$\frac{x(x+3)}{x^2+3x+1} < 0 \rightarrow \frac{-3}{x+1} < 0 \quad (x+1)(x+3) > 0$$

$$\begin{cases} x^2 + 3x < 0 \\ x^2 + 3x + 1 > 0 \end{cases}$$

$$Df = [-1, 0] \cup [-1, 0]$$

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$$\text{ب) } \cos y = \sqrt{0 - 2x}$$

$$0 - 2x \geq 0 \rightarrow x \leq 0$$

$$-1 \leq \sqrt{0 - 2x} \leq 1$$

$$\rightarrow 0 - 2x \leq 1$$

$$\textcircled{1} f \leq 2x \rightarrow x \geq \frac{f}{2} \Rightarrow [r, \frac{f}{2}]$$

$$\text{الف) } y = \log_2(1 - \log_2 x)$$

$$\rightarrow x > 0 \quad 1 - \log_2 x > 0 \rightarrow 1 > \log_2 x \rightarrow x < 2$$

$$Df = (0, 2)$$

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$$\text{ب) } y = \log_2(1 - \log_2 \frac{x}{2})$$

$$\rightarrow x > 0 \quad 1 - \log_2 \frac{x}{2} > 0 \rightarrow 1 > \log_2 \frac{x}{2} \rightarrow \frac{x}{2} < 2 \rightarrow x < 4$$

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

در این مسئله، در این صورت، باید به این نکته توجه کرد!

$$y = \sqrt{\frac{f x - x^2}{r - x}}$$

$$\frac{f x - x^2}{r - x} \geq 0$$

$$\rightarrow f x - x^2 \geq 0 \rightarrow x^2 - f x + r \leq 0 \quad (x-1)(x-3) \leq 0$$



$$Df = [1, 3]$$

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$$y = \left(\frac{r x + \omega}{r x + f} \right)! \rightarrow \frac{r x + \omega}{r x + f} \in \omega \rightarrow x = -\frac{f \omega - \omega}{r \omega - f} \rightarrow x = \frac{\omega - f \omega}{r \omega - f}$$

$$Df = \left\{ x \mid x = \frac{\omega - f \omega}{r \omega - f}, \omega \in \omega \right\}$$

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

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

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

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

