

(الف) $\frac{x^4 + 3x^2 - 11x + 3}{x^2 + 2x - 3} \div \frac{x-1}{x^2 + 2x - 3}$
 $\Rightarrow \frac{x^4 + 3x^2 - 11x + 3}{x^2 + 2x - 3} \cdot \frac{x^2 + 2x - 3}{x-1}$
 $\Rightarrow \frac{x^4 + 3x^2 - 11x + 3}{x-1}$
 $\Rightarrow \frac{x^4 + 3x^2 - 11x + 3}{x-1} = x^3 + 3x + 4$
 $\Rightarrow D_y = 1R$

$$D_y = 1R - \left\{ -r^2 \frac{1}{r} \right\}$$

$$\begin{array}{r} () \quad \cancel{2x^2} + 9x^2 + 10x + 7 \quad | \quad x+1 \\ - \quad \cancel{2x^2} + 1x^2 \\ \hline 8x^2 + 10x + 7 \\ - \quad \cancel{8x^2} + 8x \\ \hline 2x + 7 \\ - \quad \cancel{2x} + 2 \\ \hline 5 \end{array}$$

$$\begin{aligned} & \frac{x+w}{x^2+9x+10} = \frac{(x+1)(x+4)}{(x-1)(x+5)} \\ & \frac{(x+1)(x+4)}{(x-1)(x+5)} = \frac{x+w}{x^2+9x+10} \end{aligned}$$

الف) $x^2 - 2x + 2n - 1 \neq 0 \rightarrow (x-1)(x-1+2n) \neq 0$
 $\boxed{x=1}$ $\begin{matrix} 0 > \Delta \\ \text{عنه} \end{matrix}$

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

$$D_y = IR - \{1\}$$

$$\text{ب) } \frac{x+1}{x^2-1} = \frac{x+1}{(x-1)(x+1)} = \frac{1}{x-1}$$

$$D_y = (-\infty, -w] \cup (1, \infty)$$

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

$$\pi^r_{-\omega} |\pi - 1| - 2\pi + \Delta \neq 0$$

$$\textcircled{1} \quad x > 1 \rightsquigarrow x^2 - \frac{x(x-1)}{-2x+2} - 2x+2 \neq 0 \rightarrow x^2 - 4x+4 \neq 0$$

(f) $x \in I \rightsquigarrow \underbrace{\pi^r - \omega(1-x) - (x+a) \neq 0}_{-\omega + \Delta \pi} \rightarrow \begin{matrix} \pi^r + |x| \neq 0 \\ x(x+r) = 0 \end{matrix}$ (g) $\in \mathbb{R}$

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

الف $[-\pi] - 2 \frac{1}{2}$

$$[x] \geq 1$$

$$\hookrightarrow x < 0 \rightarrow \underline{(-\infty, -1)}$$

$$\hookrightarrow [x]^r - r[x] - w \neq 0$$

$$([x] - 1)([x] - 1) \neq 0$$

$$\nearrow [x] - w = 0 \rightarrow [x] = w \rightarrow x = [w, k)$$

$$\hookrightarrow [x] - 1 = 0 \longrightarrow [x] = 1 \longrightarrow [1, 2)$$

$D_y = R - [1, 2] \cup [3, 4]$

$$\text{الف) } \left[x - \frac{1}{p} \right] + \left[x + \frac{p}{p} \right] \geq 0 \rightarrow \left[x + \frac{p}{p} \right] - 1 + \left[x + \frac{p}{p} \right] \geq 0 \rightarrow 2 \left[x + \frac{p}{p} \right] \geq 1$$

$$[x + \frac{1}{p}] \geq \frac{1}{p} \Rightarrow x \in [\frac{1}{p}, +\infty)$$

... و $\frac{2}{3}$, $\frac{1}{3}$ → این پیمانی که توان از آن فراداد $\frac{1}{3}$ است

$$b) \left[x - \frac{1}{p} \right] + \left[-\left(x - \frac{1}{p} \right) \right] \geq 0 \leadsto x - \frac{1}{p} \in \mathbb{Z}$$

$$a \in \mathbb{Z} \rightarrow 0$$

$$a \notin Z \rightarrow -1$$

$$D_y = \{x \mid x = k + \frac{1}{y}, k \in \mathbb{Z}\}$$

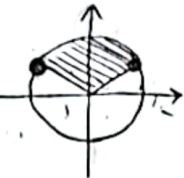
الف) $\frac{\cot x + 1}{\tan x + 1} \rightarrow \frac{\frac{\cos x}{\sin x} + 1}{\frac{\sin x}{\cos x} + 1} \rightarrow \sin x \neq 0 \rightarrow \cos x \neq 0$  $D_f = \mathbb{R} - \left\{ \frac{k\pi}{r} \right\}$

ب) $1 - r \sin^2 x \geq 0$
 $-r \sin^2 x \geq -1$
 $r \sin^2 x \leq 1$
 $\sin^2 x \leq \frac{1}{r}$
 $-\frac{1}{\sqrt{r}} \leq \sin x \leq \frac{1}{\sqrt{r}}$



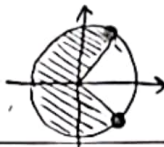
$D_f = \left[k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4} \right]$

الف) $0 \leq r \sin x - 1$
 $1 \leq r \sin x$
 $\frac{1}{r} \leq \sin x$



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

ب) $0 \leq 1 - r \cos x$
 $-1 \leq -r \cos x$
 $1 \geq r \cos x$
 $\frac{1}{r} \geq \cos x$



$D_f = \left[2k\pi + \frac{\pi}{3}, 2k\pi + \pi + \frac{\pi}{3} \right]$

الف) $-1 \leq x^2 + 3x + 1 \leq 1$

$D_f = \{3\} \cup [-2, 0]$

$-1 \leq x^2 + 3x + 1 \rightarrow x^2 + 3x + 2 \geq 0 \rightarrow (x+2)(x+1) \geq 0$
 $0 \leq x^2 + 3x + 1 \rightarrow x^2 + 3x \leq -1 \rightarrow x(x+3) \leq 0$
 $(-\infty, -3] \cup [-1, +\infty)$
 $[-3, 0]$

ب) $-1 \leq \sqrt{a - 2x} \leq 1$

$-1 \leq \cos y \leq 1$

$\sqrt{a - 2x} \geq 0$

$0 \leq a - 2x \leq 1$
 $-a \leq -2x \leq -1$
 $a \geq 2x \geq 1$
 $\frac{a}{2} \geq x \geq \frac{1}{2}$

$D_f = \left[\frac{1}{2}, \frac{a}{2} \right]$

الف) $\log_r (1 - \log_r x) > 0 \rightarrow 1 - \log_r x > 0$
 $\log_r x < 1$

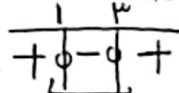
$x < r \rightarrow D_f = (-\infty, r)$

ب) $\log_r (1 - \log_r \frac{x}{r}) > 0 \rightarrow 1 - \log_r \frac{x}{r} > 0$
 $\log_r \frac{x}{r} < 1$

$x < \frac{1}{r} \rightarrow D_f = (-\infty, \frac{1}{r})$

الف) $r^x - x^r - 1 \geq 0$
 $r^x - x^r \geq 1$
 $r^x - x^r \geq r^3$

$0 \geq -x^r + x^3$
 $0 \geq (x-3)(x-1)$
 $x=3 \quad x=1$



$D_f = [1, 3]$

ب) $\frac{rx + a}{rx + r} \in W \rightarrow rx + a = rxw + rw$
 $rx - rxw = rw - a \rightarrow x = \frac{rw - a}{r - rw}$

$D_f = \{x \mid x = \frac{rk - a}{r - rk}, k \in W\}$