

۱۹۸۵ آفرین مایه ندرت

Subject:

Date:

Sa Su Mo Tu We Th Fr

۱۹۸۵ - تالیف: ... - A - تالیف: ...

الف) $\frac{x+3}{2x^3 + 12x^2 - 18x + 3} = \frac{x+3}{(x-1)(2x-1)(x+3)} \Rightarrow (x+3)(x-1)(2x-1) \neq 0$

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

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

همواره مثبت و ریشه ندارد.

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

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

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

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

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

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

ب) $y = \frac{\sin^2 x + 4}{[x]^2 - 2[x] - 3} \rightarrow ([x] - 3)([x] + 1) \neq 0 \rightarrow [x] \neq -1 \rightarrow x \notin [-1, 0)$

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

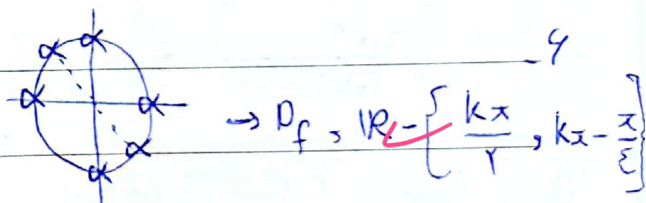
ا) $y = \sqrt{[x-1+\frac{1}{x}] + [x+\frac{1}{x}]} \Rightarrow 1[x+\frac{1}{x}] - 1 \geq 0$

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

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

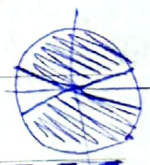
$\Rightarrow -\frac{1}{x} + x \in \mathbb{Z} \Rightarrow x \in \mathbb{Z} + \frac{1}{x} \rightarrow D_f = \{x \mid x = k + \frac{1}{x}, k \in \mathbb{Z}\}$

ا) $y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \begin{cases} \sin x \neq 0 \\ \cos x \neq 0 \\ \tan x \neq -1 \end{cases}$



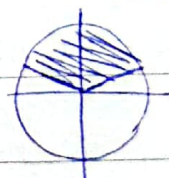
ب) $y = \sqrt{1 - 4 \sin^2 x} \rightarrow 1 - 4 \sin^2 x \geq 0 \rightarrow 1 \geq 4 \sin^2 x \rightarrow \sin^2 x \leq \frac{1}{4} \rightarrow |\sin x| \leq \frac{1}{2}$

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

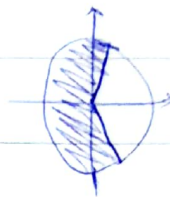


ا) $y = \sqrt{4 \sin^2 x - 1} \rightarrow 4 \sin^2 x - 1 \geq 0 \rightarrow \sin^2 x \geq \frac{1}{4} \rightarrow |\sin x| \geq \frac{1}{2}$

$\Rightarrow D_f = [k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}] \cup [k\pi + \frac{5\pi}{4}, k\pi + \frac{7\pi}{4}]$



ب) $y = \sqrt{1 - \cos x} \rightarrow 1 - \cos x \geq 0 \rightarrow \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{2}$
 $\Rightarrow D_f = \left[\frac{\pi}{3} + 2k\pi, \frac{5\pi}{3} + 2k\pi \right]$



اذا) $y = \arcsin(x^2 + 2x + 1) \Rightarrow -1 \leq x^2 + 2x + 1 \leq 1$
 $\rightarrow \begin{cases} -1 \leq x^2 + 2x + 1 \rightarrow x^2 + 2x + 2 \geq 0 \rightarrow (x+1)(x+2) \geq 0 \rightarrow \begin{matrix} - & + & - & + \\ + & - & + & - \end{matrix} \\ x^2 + 2x + 1 \leq 1 \rightarrow x(x+2) \leq 0 \rightarrow \begin{matrix} + & - & + \\ + & - & + \end{matrix} \end{cases}$

$\Rightarrow D_f = [-2, -1] \cup [0, 1]$

ب) $\cos y = \sqrt{\Delta - 2x} \rightarrow 0 \leq \Delta - 2x \leq 1 \rightarrow -\Delta \leq -2x \leq -\Delta + 1 \rightarrow \Delta \geq 2x \geq \Delta - 1$
 $\Rightarrow \Delta \geq 2x \geq \Delta - 1 \Rightarrow D_f = [\Delta - 1, \Delta]$

اذا) $y = \log_p(1 - \log_r x)$
 $\rightarrow \begin{cases} x > 0 \\ 1 - \log_r x > 0 \rightarrow \log_r x < 1 \rightarrow x < r \end{cases}$
 $\log_{\frac{1}{r}} x < 1 \rightarrow x > \frac{1}{r} \rightarrow D_f = (\frac{1}{r}, r)$

(ب.د)

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

چون متباينى ورايت جيت نامعلومه عوض منسلو!

اذا) $y = \sqrt{r^{x-x^2}} - 1 \rightarrow r^{x-x^2} \geq 1 \rightarrow x - x^2 \geq 0 \rightarrow x(1-x) \geq 0$
 $\rightarrow x - 1 + 1 \leq 0 \rightarrow (x-1)/(x-1) \leq 0 \rightarrow \begin{matrix} + & - & + \\ + & - & + \end{matrix} \rightarrow D_f = [0, 1]$

ب) $y = \left(\frac{r^{x+\Delta}}{r^{x+K}} \right)! \rightarrow \frac{r^{x+\Delta}}{r^{x+K}} \in \mathbb{N} \rightarrow x \leq \frac{(K\omega - \Delta)}{r\omega - r} \rightarrow D_f = \left[x, \frac{K\omega - \Delta}{r\omega - r} \right]$

$$9 - \text{ب}) \quad y = \log_2 \left(1 - \log_2^n \frac{1}{2} \right) \rightarrow \log_2^n \frac{1}{2} \rightarrow n > 0.$$

$$\hookrightarrow 1 - \log_2^n \frac{1}{2} > 0 \rightarrow \log_2^n \frac{1}{2} < 1 \xrightarrow{\text{مناسب } (1,0)} n > \frac{1}{2}$$

$$Df_2 \left(\frac{1}{2}, +\infty \right)$$