

۲۰. اثربینایی از بهترین سلیف‌های هفته و اقداماتی در مرتب

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حدود مجموع ضرایب برابر صفرند به ا - x یعنی پذیر است

$$\text{الحل) } y = \frac{x+1}{x^2+x-1} \rightarrow x^2+x-1 \neq 0 \rightarrow (x-1)(x+2) \neq 0 \rightarrow (x-1)(x+2)(x+1) \neq 0$$

$$\Rightarrow R - \left\{ -\frac{1}{p}, 1 \right\} = D_y$$

حزن مجموع صواب فرد و زوج برابر است بر $x + 2$ حقیقی پذیر است

ب) $y = \frac{x^3 + 9x^2 + 10x + 1}{x^3 + 9x^2 + 10x + 1} \rightarrow x^3 + 9x^2 + 10x + 1 \neq 0 \rightarrow (x+1)(x^2 + 8x + 1) \neq 0 \rightarrow (x+1)(x+1)(x+7) \neq 0$

$$\Rightarrow D_y = \mathbb{R} - \left\{ -1, -\frac{1}{y} \right\}$$

چون مجموع ضرایب مندرج به ۱- x هستی نذر است

حون عبارت $x^3 - x^2 + x - 1$ دارای $(x-1)$ است جواب ندارد فقط $x=1$ میخورد است

$$\Rightarrow D_y = 1R \cdot 11$$

حل ۱-۲-۳ هر دو مثبت است تا سری دارد

$$c) y = \sqrt{\frac{x+1}{x^2-2x^2+1}} \rightarrow \frac{x+1}{x^2-2x^2+1} \geq 0 \rightarrow \frac{x+1}{(x-1)(x^2-2x+1)} \geq 0 \rightarrow \frac{-1}{+ \phi - \frac{1}{2} +}$$

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

$$x^p - 1_{x \neq 0} = (x-1)^p + f \text{ p.b.c.}$$

$$y = \frac{y}{x^p - a|x-1| - y + a} \rightarrow x^p - a|x-1| - y + a \neq 0 \rightarrow (x-1)^p - a|x-1| + 1 \neq 0 \rightarrow 1 - a + 1 \neq 0$$

$$\begin{aligned} & \frac{x^2 - a|x-1| - 1}{x+1} = 0 \Rightarrow x^2 - a|x-1| - 1 = 0 \\ & \Rightarrow (x-1)(x+1) \neq 0 \Rightarrow x \neq -1, x \neq 1 \Rightarrow \begin{cases} |x-1|=1 \rightarrow x-1=\pm 1 \Rightarrow x=2, x=0 \\ |x-1|=t \rightarrow x-1=\pm t \Rightarrow x=a, x=-a \end{cases} \end{aligned}$$

$$\Rightarrow D_y = \mathbb{R} - \{-3, 0, 1, 2\} \quad \textcircled{D}$$

الف) $y = \sqrt{-x} - 2 \rightarrow [-x] - 2 \geq 0 \rightarrow [-x] \geq 2 \Rightarrow -x \geq 2 \rightarrow x \leq -2 \Rightarrow D_y = (-\infty, -2]$

$$\hookrightarrow y = \frac{2x^2 + 7}{x^2 - 1} \rightarrow [x]^2 - 1[x] - 7 \neq 0 \rightarrow ([x] - 3)([x] + 1) \neq 0 \Rightarrow [x] \neq 3 \text{ und } [x] \neq -1$$

$$\Rightarrow \begin{cases} [x] = 1 \Rightarrow 1 \leq x < 2 \\ [x] = -1 \Rightarrow -1 \leq x < 0 \end{cases} \Rightarrow D_y = 1R - ([-1, 0) \cup (1, 2))$$

$$\text{الف) } y = \sqrt{\left[x - \frac{1}{p}\right] + \left[x + \frac{1}{p}\right]} \quad \begin{array}{l} \left[x + \frac{1}{p}\right] = \left[x + 1 - \frac{1}{p}\right] \Rightarrow \left[x - \frac{1}{p}\right] + 1 \\ \rightarrow \left[x - \frac{1}{p}\right] + \left[x - \frac{1}{p}\right] + 1 \geq 0 \rightarrow 2\left[x - \frac{1}{p}\right] \geq -1 \Rightarrow \left[x - \frac{1}{p}\right] \geq -\frac{1}{2} \end{array}$$

→ در برآورد x و $[x - \frac{1}{p}] \geq 0 \Rightarrow x - \frac{1}{p} \geq 0 \Rightarrow x \geq \frac{1}{p} \Rightarrow D_y = (\frac{1}{p}, +\infty)$

ب) $y = \sqrt{[x - \frac{1}{x}] + [\frac{1}{x} - x]}$ $\xrightarrow{[x - \frac{1}{x}] = [u]}$ $[u] + [-u] \geq 0$ $\xrightarrow{\text{معیار}}$ $\begin{cases} [u] + [-u] = 0: \text{ اگر } u \in \mathbb{Z} \text{ باشد} \\ [u] + [-u] = -1: \text{ اگر } u \notin \mathbb{Z} \text{ باشد} \end{cases} \Rightarrow u \in \mathbb{Z}$

$$\Rightarrow x - \frac{1}{x} = k \quad (k \in \mathbb{Z}) \Rightarrow x = k + \frac{1}{x} \Rightarrow D_y = \left\{ k + \frac{1}{x} \mid k \in \mathbb{Z} \right\}$$

$Dy = \{n \mid n = k + \frac{1}{p}, k \in \mathbb{Z}\}$ ← ن ایفوری درست نه

$$\text{ا) } y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \left\{ \begin{array}{l} \sin x \neq 0 \\ \cos x \neq 0 \\ \tan x \neq -1 \Rightarrow x \neq k\pi - \frac{\pi}{4} \end{array} \right\} \Rightarrow D_y = \mathbb{R} - \left\{ \frac{k\pi}{4}, k\pi - \frac{\pi}{4} \right\} (k \in \mathbb{Z})$$

$$\text{ب) } y = \sqrt{1 - f \sin^2 x} \Rightarrow 1 - f \sin^2 x \geq 0 \rightarrow f \sin^2 x \leq 1 \rightarrow \sin^2 x \leq \frac{1}{f} \rightarrow |\sin x| \leq \frac{1}{\sqrt{f}} \Rightarrow -\frac{1}{\sqrt{f}} \leq \sin x \leq \frac{1}{\sqrt{f}} \Rightarrow D_y = \left[k\pi - \frac{\pi}{2}, k\pi + \frac{\pi}{2} \right]$$

$$\text{ا) } y = \sqrt{p \sin x - 1} \rightarrow p \sin x - 1 \geq 0 \rightarrow p \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{p} \Rightarrow D_y = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{\pi}{2} \right]$$

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

$$\text{ا) } y = \arcsin(x^2 + x + 1) \rightarrow -1 \leq x^2 + x + 1 \leq 1 \rightarrow \left\{ \begin{array}{l} x^2 + x + 1 \geq 0 \rightarrow (x+1)(x+2) \geq 0 \\ x^2 + x \leq 0 \rightarrow |x| \leq 1 \end{array} \right. \Rightarrow D_y = [-1, 0] \cup [0, 1]$$

$$\text{ب) } \cos y = \sqrt{a - px} \rightarrow \left\{ \begin{array}{l} a - px \geq 0 \rightarrow x \leq \frac{a}{p} \\ -1 \leq \sqrt{a - px} \leq 1 \rightarrow 0 \leq a - px \leq 1 \rightarrow 0 \leq a - px \leq 1 \rightarrow \left\{ \begin{array}{l} a - px \geq 0 \Rightarrow x \leq \frac{a}{p} \\ a - px \leq 1 \Rightarrow x \geq \frac{a-1}{p} \end{array} \right. \end{array} \right. \Rightarrow D_y = \left[\frac{a-1}{p}, \frac{a}{p} \right]$$

$$\text{① و ②} \rightarrow \frac{a-1}{p} \leq x \leq \frac{a}{p} \Rightarrow D_y = \left[\frac{a-1}{p}, \frac{a}{p} \right]$$

$$\text{ا) } y = \log_r(1 - \log_p x) \rightarrow \left\{ \begin{array}{l} x > 0 \\ 1 - \log_p x > 0 \rightarrow \log_p x < 1 \rightarrow x < p \end{array} \right\} \Rightarrow 0 < x < p \Rightarrow D_y = (0, p)$$

$$\text{ب) } y = \log_r(1 - \log_p \frac{x}{p}) \rightarrow \left\{ \begin{array}{l} x > 0 \\ 1 - \log_p \frac{x}{p} > 0 \rightarrow \log_p \frac{x}{p} < 1 \rightarrow \frac{x}{p} < p \rightarrow x < p^2 \end{array} \right\} \Rightarrow \frac{1}{p} < x < p^2 \Rightarrow D_y = \left(\frac{1}{p}, p^2 \right)$$

$$\text{ا) } y = \sqrt{p^2 x - x^2} - 1 \rightarrow p^2 x - x^2 - 1 \geq 0 \rightarrow p^2 x - x^2 \geq 1 \rightarrow p^2 x - x^2 \geq p^2 \Rightarrow x - x^2 \geq p \rightarrow x^2 - x + p \leq 0 \rightarrow (x-1)(x-p) \leq 0 \Rightarrow D_y = [1, p]$$

$$\text{ب) } y = \left(\frac{px + a}{px + b} \right)! \rightarrow \frac{px + a}{px + b} = k (k \in \mathbb{N}) \rightarrow px + a = kpx + kb \rightarrow a - kb = (k-1)p|x| \Rightarrow x = \frac{a - kb}{k-1} (k \in \mathbb{N}) \Rightarrow D_y = \left\{ \frac{a - kb}{k-1} \mid k \in \mathbb{N} \right\}$$