

راه حل هایی که نوشته بدست مخالفه شود! ۱۴,۵

الف) $\frac{x+3}{2x^3+3x^2-8x+3} = \frac{x+3}{(x-1)(2x^2+5x-3)}$ $\Rightarrow$ $\{x = -3, 1, \frac{1}{2}, -\frac{3}{2}\}$

$D = \mathbb{R} - \{-3, \frac{1}{2}, 1\}$

$-\frac{3}{x+3} + \frac{1}{x-1} + \frac{1}{2x-\frac{3}{2}}$

ب) $\frac{x+3}{2x^3+9x^2+10x+3} = \frac{x+3}{(x+1)(2x^2+7x+3)}$ $\Rightarrow$ $\{x = -3, -1, -\frac{1}{2}, -\frac{3}{2}\}$

$D = \mathbb{R} - \{-3, -1, -\frac{1}{2}\}$

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

$\frac{-3}{x-1}$

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

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

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

$y = \frac{2}{x^2-5|x-1|-2x+5} = 0 \Rightarrow x^2-2x+5 = 5|x-1|$

$\begin{cases} -x^2+2x-5 = 5x-5 \rightarrow x^2+3x=0 \rightarrow x(x+3) \\ x^2-2x+5 = 5x-5 \rightarrow x^2-7x+10=0 \rightarrow (x-2)(x-5) \end{cases}$

$D = \mathbb{R} - \{0, -3, -2, -5\}$

الف) $y = \sqrt{[-x]-2}$ $[-x]-2 \geq 0 \Rightarrow [-x] \geq 2 \Rightarrow -x \geq 2 \Rightarrow x \leq -2$

$D = (-\infty, -2]$

ب) $y = \frac{5x^2+4}{[x]^2-2[x]-3}$

$[x]^2-2[x]-3 \geq 0 \Rightarrow x^2-2x-3 \geq 0 \Rightarrow (x-3)(x+1) \geq 0$

$D = \mathbb{R} - (-1, 3)$

الف) $\sqrt{[x-\frac{1}{2}]+[x+\frac{2}{3}]} \geq 0 \Rightarrow [x-\frac{1}{2}]+[x+\frac{2}{3}] \geq 0$

$[x-\frac{1}{2}] \geq -\frac{1}{2} \Rightarrow x-\frac{1}{2} \geq -\frac{1}{2} \Rightarrow x \geq 0$

ب) $y = \sqrt{[x-\frac{1}{2}]+[\frac{1}{2}-x]} \geq 0$

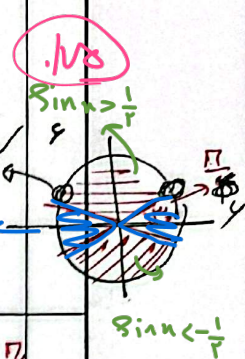
$[x-\frac{1}{2}] \geq -\frac{1}{2} \Rightarrow x \geq 0$

$[x] + [-x] \geq 0$
 $x \in \mathbb{Z} \rightarrow 0$
 $x \notin \mathbb{Z} \rightarrow -1$
 $D = \mathbb{Z}$

الف) $y = \frac{\cot n + 1}{\tan n + 1}$
 $n \neq \frac{k\pi}{\pi}$

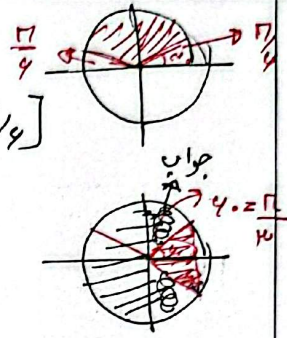
$\tan n + 1 = 0 \rightarrow \tan n = -1$
 $D = R - \{k\pi - \frac{\pi}{4}\}$
 باید تعریف می‌شود!

اول مرتبه
 پائین صاف



ب) $y = \sqrt{1 - \sin^2 n}$
 $\sin n \geq \frac{1}{\sqrt{2}} \rightarrow \sin n \geq \frac{1}{\sqrt{2}}$
 $D = R - (k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4})$
 بازه‌های بسته

الف) $y = \sqrt{2 \sin n - 1}$
 $\sin n \geq \frac{1}{2}$
 $D = [k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6}]$



ب) $y = \sqrt{1 - 2 \cos n}$
 $\cos n \leq \frac{1}{2}$
 $D = R - (k\pi - \frac{\pi}{3}, k\pi + \frac{\pi}{3})$

الف) $y = \arcsin(n^2 + 3n + 1)$

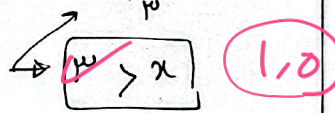
$-1 \leq n^2 + 3n + 1 \leq 1$
 $n(n+3) \leq 0$
 $n^2 + 3n + 2 \geq 0$
 $(n+1)(n+2) \geq 0$
 $D = [-3, -1] \cup [-1, 0]$

ب) $y = \sqrt{5 - 2n}$
 $0 \leq 5 - 2n \leq 1 \rightarrow 2n \leq 5 \rightarrow n \leq \frac{5}{2}$
 $D = [2, \frac{5}{2}]$

الف) $y = \log_2(1 - \log_3 n)$

$1 - \log_3 n > 0 \rightarrow \log_3 n < 1$
 $n < 3$

$n < 3, n > 0 \rightarrow D = (0, 3)$
 $D = (-\infty, 3)$



ب) $\log_2(1 - \log_3 n) \rightarrow 1 - \log_3 n > 0 \rightarrow \log_3 n < 1 \rightarrow \frac{1}{3} > n$
 $D = (\frac{1}{3}, \infty)$

الف) $y = \sqrt{2^{kx - n^2} - 1}$
 $2^{kx - n^2} - 1 \geq 0 \rightarrow 2^{kx - n^2} \geq 1 \rightarrow kx - n^2 \geq 0$
 $kx \geq n^2 \rightarrow n^2 \leq kx \rightarrow n \leq \sqrt{kx}$
 $D = (-\infty, \sqrt{kx}] \cup [1, \infty)$

ب) $(\frac{kx + 5}{2n + 4})!$
 $kx + 5 = k(2n + 4)$

$2n + 4 = 0 \rightarrow n = -2$
 $(k - 2k)n = k - 5 \rightarrow n = \frac{k - 5}{-2k + 4}$

$\{n \mid \frac{5 - k}{2k - 4} = n, k \in \mathbb{N}\}$

۲- الف) $x^2 - 2x + 2n - 1 = 0$ $\xrightarrow[\text{نقش پذیر بر } n-1]{\text{جواب صفر است}}$ $(n-1)(x^2 - x + 1) = 0$

$\begin{cases} n-1=0 \rightarrow n=1 \\ x^2 - x + 1 = 0 \end{cases} \xrightarrow{\Delta < 0} \text{ریشه حقیقی ندارد}$

$\rightarrow D_f = \mathbb{R} - \{1\}$

۵- الف) $[n - \frac{1}{x}] + [n + \frac{2}{x}] \geq 0 \xrightarrow{+1} [n - \frac{1}{x}] + 1 + [n + \frac{2}{x}] \geq 1$

$[n + \frac{2}{x}] + [n + \frac{2}{x}] \geq 1 \rightarrow [n + \frac{2}{x}] \geq \frac{1}{2}$ $\xrightarrow[\text{این عدد صحیح است!}]{\text{اولین عدد صحیح بزرگتر از } \frac{1}{2}}$ $n + \frac{2}{x} \geq 1$

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

۵- ب) $[n - \frac{1}{x}] + [-n + \frac{1}{x}] \geq 0$

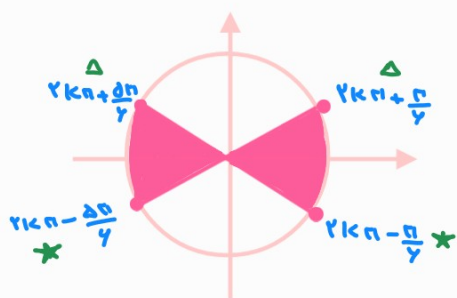
میدانیم:

$[n] + [-n] \begin{cases} n \in \mathbb{Z} & 0 \checkmark \\ n \notin \mathbb{Z} & -1 \times \end{cases}$

$\rightarrow [n - \frac{1}{x}] \in \mathbb{Z} \rightarrow n \in \mathbb{Z} + \frac{1}{x}$

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

۹- ب) $1 - \sqrt{2} \sin^2 n \geq 0 \rightarrow \sqrt{2} \sin^2 n \leq 1 \rightarrow \sin^2 n \leq \frac{1}{2} \rightarrow -\frac{1}{\sqrt{2}} \leq \sin n \leq \frac{1}{\sqrt{2}}$

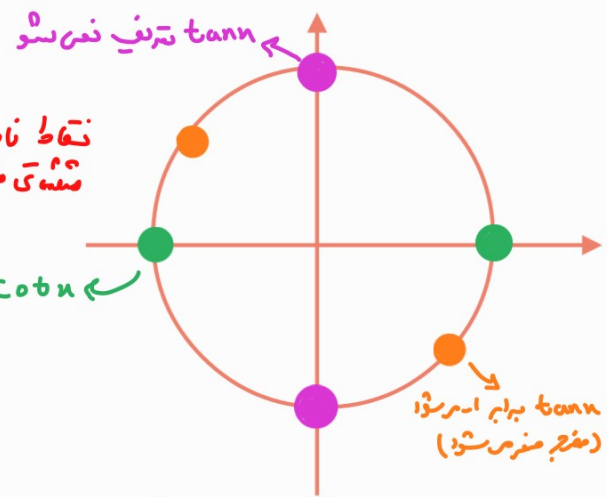


$\rightarrow D_f = [2k\pi - \frac{\pi}{4}, 2k\pi + \frac{\pi}{4}]$

الف - 4 $y = \frac{\cot x + 1}{\tan x + 1}$

نقاط نامعلوم را در دایره
مستوی مشخص میکنیم.

$\cot x$ تعریف نمیشود



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

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

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

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

الف - 9 $y = \log_2 (1 - \log_2^n)$ $\rightarrow \log_2^n \rightarrow n > 0$

$\rightarrow 1 - \log_2^n > 0 \rightarrow \log_2^n < 1 \rightarrow n < 2$

$D_f = (0, 2)$

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

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

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

الف - 10 $\frac{x_{n-1}^2}{2} - 1 \geq 0 \rightarrow \frac{x_{n-1}^2}{2} \geq 1 \rightarrow x_{n-1}^2 \geq 2 \rightarrow$

$n^2 - 2n + 3 \leq 0 \rightarrow (n-1)(n-3) \leq 0$ $\frac{1}{+} \frac{3}{-} \rightarrow D_f = [1, 3]$

