

۱۹.۵ آزمون های ندرس

$f(x) = \sqrt{(a-x)x^2 + b}$

در $x \rightarrow +\infty$

$\lim_{x \rightarrow +\infty} (a-x)x^2 + b \rightarrow \frac{+\infty}{-\infty}$
if $x=3 \rightarrow \frac{b}{-4}$

$x(x-m^2)$

$m^2 < x$

$1-(-1)=2$

$\sqrt{x(x-m^2)} \rightarrow \sqrt{x(-1)} = \sqrt{-x}$

$\langle a \rangle_0, \Delta \langle a \rangle_0$

در $\mathbb{R}$ - دانه مقبوض

دقت کن

$\frac{\sqrt{4-x^2}}{[x]+[-x]+1} \Rightarrow 4-x^2 \geq 0 \rightarrow 2 \geq x^2 \rightarrow -2 \leq x \leq 2$
 $[x]+[-x]+1 \neq 0 \rightarrow$
 $[x]+[-x] = -1 \rightarrow$ معنی ندارد

$D_f = [-2, 2]$

الف) $y = \sqrt{x^3 + 3x^2} = \sqrt{x^2(x+3)} \rightarrow x^2(x+3) \geq 0$

$D_f = [0, +\infty)$

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

$D_f = (-\infty, -1] \cup [0, +\infty)$

الف) $y = \sqrt{|x-2|-3} \Rightarrow |x-2|-3 \geq 0 \rightarrow |x-2| \geq 3 \rightarrow x-2 \geq 3 \rightarrow x \geq 5$ or $x-2 \leq -3 \rightarrow x \leq -1$
 $D_f = (-\infty, -1] \cup [5, +\infty)$

ب) $y = \sqrt{4-|x-2|} \Rightarrow 4-|x-2| \geq 0 \rightarrow |x-2| \leq 4 \rightarrow -2 \leq x \leq 6$
 $D_f = [-2, 6]$

الف) $y = \sqrt{1-x|x|} \Rightarrow 1-x|x| \geq 0 \rightarrow 1-x^2 \geq 0 \rightarrow (1+x)(1-x) \geq 0 \rightarrow -1 \leq x \leq 1$

$\frac{x}{1+x^2} \geq 0 \rightarrow 1+x^2 \geq 0 \rightarrow \mathbb{R}$

ب) $y = \frac{1}{\sqrt{3-|x-5|}-1} \Rightarrow 3-|x-5| \geq 1 \rightarrow |x-5| \leq 2 \rightarrow 3 \leq x \leq 7$

الف) $D_f = [3, 7]$

ب) $3-|x-5| \neq 1 \rightarrow |x-5| \neq 2 \rightarrow x \neq 3$ or $x \neq 7$

الف) $y = \frac{\sin^2 x - 1}{\cos x} \Rightarrow \cos x \neq 0 \rightarrow \mathbb{R} - \{k\pi + \frac{\pi}{2} | k \in \mathbb{Z}\}$

ب) $y = \frac{\cos x}{x \cos x - 1} \Rightarrow x \cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{x}$
 $\mathbb{R} - \{k\pi + \frac{\pi}{2}\}$

الف) $y = \frac{x+2}{|2x+1| - |x+3|} \Rightarrow |2x+1| - |x+3| = 0$
 $|2x+1| = |x+3| \xrightarrow{2 \text{ ضرب}}$
 $4x^2 + 4x + 1 = x^2 + 6x + 9$
 $3x^2 - 2x - 8 = 0$
 $(x-4)(x+2) = 0$
 $x = 4$ or $x = -2$
 $y = \frac{4+2}{|8+1| - |4+3|} = \frac{6}{7-7} = \text{undefined}$
 $y = \frac{-2+2}{|-4+1| - |-2+3|} = \frac{0}{-3-1} = 0$

ب) $y = \sqrt{|2x+1| - |x+3|} \Rightarrow |2x+1| - |x+3| \geq 0$
 $|2x+1| \geq |x+3|$

$DP = (-\infty, -\frac{4}{3}] \cup [2, +\infty)$

or $DP = (-\frac{4}{3}, 2)$

$3x^2 - 2x - 8 \geq 0$
 $x = \frac{2 \pm \sqrt{4 + 96}}{6} = \frac{2 \pm 10}{6}$
 $x = 2$ or $x = -\frac{4}{3}$

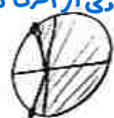
$f(x) = \sqrt{\log_{10} \log_{10} (x+1)}$

① $x+1 > 0 \rightarrow x > -1$

② $\log_{10} (x+1) > 0 \rightarrow x+1 > 1 \rightarrow x > 0$

③ $\log_{10} \log_{10} (x+1) > 0 \rightarrow \log_{10} (x+1) > 1 \rightarrow x+1 > 10 \rightarrow x > 9$

الف) $y = \log (r \cos x + 1) \rightarrow r \cos x + 1 > 0$
 $\cos x > -\frac{1}{r}$



$DP = [r\pi + \frac{\pi}{3}, r\pi + \frac{2\pi}{3}]$
 or $[r\pi - \frac{\pi}{3}, r\pi + \frac{\pi}{3}]$

ب) $y = \sqrt{\log \frac{x-1}{x+1}} \Rightarrow \frac{x-1}{x+1} > 0$
 $\Rightarrow \frac{x-1}{x+1} > 0$

$\Rightarrow \frac{x-1}{x+1} > 0 \rightarrow x-1 > 0 \rightarrow x > 1$

$DP = (1, +\infty)$

خسته باشید

موفق باشید

(۲) چون دامنه تابع Δ است پس عبارت زیر را بنویسیم Δ عبارت زیر را بنویسیم (بارشیه Δ یا بدون بارشیه Δ)

مواجهه کنیم (سهم Δ دارد چون ضریب Δ یک است)

$$\Delta \leq 0 \rightarrow (2)^2 - 4(2 - m^2) \leq 0 \rightarrow 4 - 8 + 4m^2 \leq 0 \rightarrow 4m^2 \leq 4 \rightarrow m^2 \leq 1$$

$$-1 \leq m \leq 1 \rightarrow \min(m) = -1 \rightarrow \max(m) - \min(m) = 1 - (-1) = 2$$

$$\rightarrow \max(m) = 1$$