

۱۹۵۵
آزمایش

$$f(x) = \sqrt{(a-x)x^2 + ax + b} \rightarrow (a-x)x^2 + ax + b \geq 0$$

$$\frac{-x}{-1} + \frac{x^2}{1} \rightarrow ax + b \rightarrow ax^2 \Rightarrow 2x + b \geq 0$$

$2x^2 \text{ اولیای } y + b = 0 \rightarrow b = -2$

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

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

$$f(m-1)(m+1) < 0$$

$1 \leftarrow \quad \rightarrow -1$

$1 - (-1) = 2$

$$\frac{\sqrt{4-x^2}}{[x] + [-x] + 1} \rightarrow \begin{cases} 4-x^2 \geq 0 \rightarrow -2 \leq x \leq 2 \\ [x] + [-x] + 1 \neq 0 \rightarrow x \in \mathbb{Z} \end{cases} \rightarrow D_f = \{-2, -1, 0, 1, 2\}$$

$n = \omega$

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

$D_f = [-3, +\infty)$

$$y = \sqrt{\frac{(x^2-1)(x^3-3x^2)}{x^3-1}} \Rightarrow \frac{(x-1)(x+1)x^2(x-3)}{(x-1)(x^2+x+1)} \geq 0$$

$\Delta < 0$
(همواره +)

$D_f = (-\infty, -1] \cup [3, +\infty) \cup \{0\}$

$$y = \sqrt{|x-2| - 3} \xrightarrow{O \geq} |x-2| \geq 3 \rightarrow \begin{cases} x-2 \geq 3 \rightarrow x \geq 5 \\ x-2 \leq -3 \rightarrow x \leq -1 \end{cases}$$

$$y = \sqrt{4 - |2-x|} \xrightarrow{O \geq} |2-x| \leq 4 \rightarrow -4 \leq 2-x \leq 4 \rightarrow -6 \leq -x \leq 2$$

$6 \geq x \geq -2$

الف) $y = \sqrt{1-x|x|}$ $\rightarrow x > 0: 1-x^2 \geq 0 \rightarrow -1 \leq x \leq 1 \rightarrow [0, 1]$
 $x < 0: 1+x^2 \geq 0 \rightarrow$ همیشه برقرار است $\rightarrow (-\infty, 1] = D_f$

ب) $y = \frac{1}{\sqrt{3-|x-5|-1}}$ $3-|x-5| \neq 0 \rightarrow |x-5| \neq 3 \rightarrow x \neq 2, 8$
 $3-|x-5| \geq 0 \rightarrow -3 \leq x-5 \leq 3 \rightarrow 2 \leq x \leq 8$
 $D_f = [2, 8] - \{2, 8\}$

الف) $y = \frac{\sin^2 x - 1}{\cos x} \Rightarrow \cos x \neq 0$ $D_f = \mathbb{R} - \{\frac{k\pi}{2} : k \in \mathbb{N}\}$

مشتق $k=8$ باشد می شود نقطه $x=4\pi$ در آن $\sin x=0$ است!

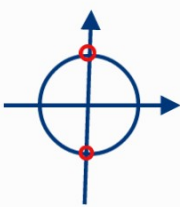
ب) $\frac{\cos x}{2\cos x - 1} \Rightarrow 2\cos x \neq 1 \rightarrow \cos x \neq \frac{1}{2}$ **راه حل صغری لبه را**
 $D_f = \mathbb{R} - \{\frac{k\pi}{3}, \frac{5k\pi}{3} : k \in \mathbb{N}\}$

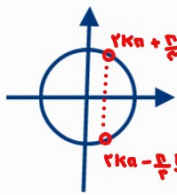
الف) $\frac{x+3}{|2x+1|-|x+3|} \Rightarrow |2x+1|-|x+3| \neq 0 \rightarrow |2x+1| \neq |x+3| \rightarrow (2x+1)^2 \neq (x+3)^2$
 $4x^2+4x+1 \neq x^2+6x+9 \rightarrow 3x^2-2x-8 \neq 0 \rightarrow x \neq \frac{2 \pm \sqrt{4+96}}{6} = \frac{2 \pm 10}{6} \rightarrow x \neq 2, -\frac{4}{3}$
 $D_f = (-\infty, -\frac{4}{3}) \cup [2, +\infty)$

$f(x) = \sqrt{\log_{\omega}^{(2x-1)} \log_{\omega/5}^{(2x-1)}}$ $\rightarrow 2x-1 > 0 \rightarrow x > \frac{1}{2}$
 $\rightarrow \log_{\omega/5}^{(2x-1)} > 0 \rightarrow 2x-1 > 1 \rightarrow x > 1$
 $\rightarrow \log_{\omega}^{(2x-1)} \geq 0 \rightarrow \log_{\omega}^{(2x-1)} \leq 1 \rightarrow 2x-1 \leq \omega \rightarrow x \leq 3$
 $D_f = (1, 3]$

الف) $y = \log(2\cos x + 1) \rightarrow 2\cos x + 1 > 0 \rightarrow \cos x > -\frac{1}{2}$
 $D_f = \mathbb{R} - [\frac{2k\pi}{3}, \frac{4k\pi}{3}]$

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

الف - ٧ $y = \frac{\sin^n x - 1}{\cos x} \rightarrow \cos x \neq 0 \rightarrow$  $\rightarrow D_f = \mathbb{R} - \left\{k\pi + \frac{\pi}{2}\right\}$

ب - ٧ $y = \frac{\cos x}{2\cos x - 1} \rightarrow 2\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2} \rightarrow$  $D_f = \mathbb{R} - \left\{2k\pi \pm \frac{\pi}{3}\right\}$
