

(۱) $2x^4 + 4x^3 - 12x + 4 = (x-1)(2x^3 + 6x^2 + 8x - 4) \rightarrow$ شرط: $\frac{1}{2} > -4 \Rightarrow DA = \mathbb{R} - \{\frac{1}{2}, -4\}$

(۲) $2x^4 + 9x^3 + 10x + 4 = (x+1)(2x^3 + 7x^2 + 4x + 4) \rightarrow$ شرط: $-4 > -\frac{1}{2} \Rightarrow DA = \mathbb{R} - \{-4, -\frac{1}{2}\}$

(الف) $x^3 - 2x^2 + 2x - 1 = (x-1)(x^2 - x + 1) \Rightarrow DA = \mathbb{R} - \{1\}$

(ب) $\frac{x+3}{x^3 - 2x^2 + 2x - 1} \geq 0 \Rightarrow \frac{-3}{x^2 - 2x + 1} \geq 0 \Rightarrow DA = \mathbb{R} - \{1\}$

$x^3 - 2|x-1| - 2x + 8 \neq 0 \rightarrow \begin{cases} x > 1 \rightarrow x^3 - 2x + 10 \neq 0 \\ x = 1 \rightarrow x^3 - 2x + 8 \neq 0 \\ x < 1 \rightarrow x^3 + 2x \neq 0 \end{cases} \Rightarrow DA = \mathbb{R} - \{0, 1, 10\}$

(الف) $[x] \geq 1 \Rightarrow -x \geq 1 \Rightarrow DA = (-\infty, -1]$

(ب) $[x]^2 - 2[x] - 3 \neq 0 \Rightarrow [x] \neq 3, [x] \neq -1 \Rightarrow \begin{cases} [x] \neq 3 \rightarrow x \geq 0, x < -1 \\ [x] \neq -1 \rightarrow x \geq 1, x < 0 \end{cases}$
 $\Rightarrow DA = (-\infty, -1) \cup [0, 3) \cup (1, +\infty)$

(الف) $[x - \frac{1}{2}] + [x + \frac{1}{2}] \geq 0 \rightarrow [x - \frac{1}{2}] + 1 + [x + \frac{1}{2}] - 1 \geq 0 \rightarrow 2[x + \frac{1}{2}] - 1 \geq 0 \rightarrow [x + \frac{1}{2}] \geq \frac{1}{2}$
 $x \geq \frac{1}{2} \Rightarrow DA = [\frac{1}{2}, +\infty)$

(ب) $[x - \frac{1}{2}] + [\frac{1}{2} - x] \geq 0 \rightarrow [t] + [-t] \geq 0 \rightarrow t \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{2} \rightarrow DA = \{x | x = k + \frac{1}{2}, k \in \mathbb{Z}\}$

(الف) $\sin x \neq 0, \cos x \neq 0, \tan x \neq -1 \Rightarrow DA = \mathbb{R} - \{\frac{k\pi}{2}, k\pi - \frac{\pi}{4}\}$

(ب) $1 - \frac{\sin^2 x}{\sin^2 x} \geq 0 \rightarrow \sin^2 x \leq \frac{1}{4} \rightarrow -\frac{1}{2} \leq \sin x \leq \frac{1}{2} \Rightarrow DA = [k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6}]$

(الف) $2\sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{2} \Rightarrow DA = [2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}]$

(ب) $1 - 2\cos x \geq 0 \rightarrow \cos x \leq \frac{1}{2} \Rightarrow DA = [2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}]$

(الف) $-1 \leq x^2 + 4x + 1 \leq 1 \rightarrow 0 \leq x^2 + 4x \leq 2 \rightarrow \frac{-4 \pm \sqrt{16 - 0}}{2} \leq x \leq \frac{-4 \pm \sqrt{16 - 0}}{2} \rightarrow -4 \leq x \leq 0 \Rightarrow DA = [-4, 0]$

(ب) $-1 \leq \sqrt{8 - 2x} \leq 1 \rightarrow 0 \leq 8 - 2x \leq 1 \rightarrow x \leq \frac{7}{2} \Rightarrow DA = (-\infty, \frac{7}{2}]$

انتهای بازه باید از ابتدای آن بزرگتر باشد

الف) $1 - \log_2 x > 0 \Rightarrow \log_2 x < 1 \Rightarrow x < 2 \Rightarrow DA = (0, 2)$

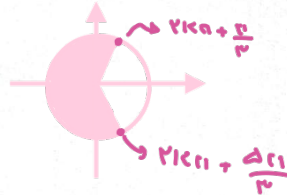
$\log_2 x \rightarrow x > 0$

ب) $x > 0$
 $1 - \log_2 \frac{x}{2} > 0 \Rightarrow \log_2 \frac{x}{2} < 1 \rightarrow x > \frac{1}{2} \Rightarrow DA = (\frac{1}{2}, +\infty)$

الف) $2^{\epsilon x - x^2} - 1 \geq 0 \rightarrow 2^{\epsilon x - x^2} \geq 1 \Rightarrow \epsilon x - x^2 \geq 0 \rightarrow x^2 - \epsilon x \leq 0 \rightarrow \frac{1}{\epsilon} \leq x \rightarrow DA = [1, 2]$

ب) $\frac{x^2 + d}{x^2 + \epsilon} \in \mathbb{W} \rightarrow x \in -\frac{\epsilon W - d}{x^2 - \epsilon} \rightarrow DA = \{x \mid x = \frac{\epsilon k + d}{x^2 - \epsilon}, k \in \mathbb{W}\}$

ب-ص) $1 - \epsilon \cos n \geq 0 \rightarrow \cos n \leq \frac{1}{\epsilon}$



$\rightarrow DA = [r \cos n + \frac{\pi}{r}, r \cos n + \frac{\pi}{r}]$