

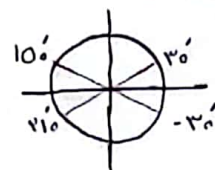
الف) $2x^3 + 3x^2 - 11x + 3 \neq 0 \rightarrow 2 - 1 + 3 + 3 = 0 \rightarrow x=1$ به بخشید $\frac{x-1}{2x^2+5x-3} = 2x^2+5x-3$ $(x-1)(2x^2+5x-3) \rightarrow \Delta = 25+24 = 49 \rightarrow x = \frac{-5 \pm 7}{4} = \frac{1}{2}, -3$ $\rightarrow Df = IR - \{1, \frac{1}{2}, -3\}$ ب) $2+10-9-3=0 \rightarrow x=-1$ به بخشید $\frac{x+1}{2x^2+7x+3} = 2x^2+7x+3$ $2x^3+9x^2+10x+3 \div x+1 = 2x^2+7x+3 \rightarrow \Delta = 49-24 = 25 \rightarrow x = \frac{-7 \pm 5}{4} = -\frac{1}{2}, -3$ $Df = IR - \{-1, -\frac{1}{2}, -3\}$	الف) $x^3 - 2x^2 + 2x - 1 = 0 \rightarrow x=1$ به بخشید $\frac{x-1}{x^3-x^2} = \frac{x-1}{x^2-x+1}$ $\leftarrow x \neq 0 \leftarrow (x-1)(x^2-x+1) \leftarrow$ $Df = IR - \{1\}$ ب) $x^3 - 2x^2 + 2x - 1 \neq 0 \rightarrow (x-1)(x^2-x+1) \neq 0 \rightarrow x \neq 1$ $\frac{x+3}{x^3-2x^2+2x+1} \geq 0 \rightarrow \frac{x+3}{(x-1)(x^2-x+1)} \geq 0$ $\rightarrow \frac{-3}{+} \frac{1}{-} \frac{1}{+} \rightarrow Df = IR - \{1, -3\}$	$x^2 - 5 x-1 - 2x + 5 \neq 0$ اگر $x \geq 1 \rightarrow x-1 = x-1 \rightarrow x^2 - 5x + 5 - 2x + 5 = x^2 - 7x + 10 = (x-5)(x-2)$ اگر $x < 1 \rightarrow x-1 = -x+1 \rightarrow x^2 + 5x - 5 - 2x + 5 = x^2 + 3x = x(x+3)$ $Df = IR - \{-3, 0, 2, 5\}$	الف) $[-x] - 2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow x \leq -2 \quad Df = (-\infty, -2]$ ب) $[x^2] - 2[x] - 3 \neq 0 \rightarrow ([x]+1)([x]-3) \neq 0$ اگر $[x]+1=0 \rightarrow -1 \leq x < 0 \rightarrow Df = IR - \{[-1, 0) \cup [3, 4)\}$ اگر $[x]-3=0 \rightarrow 3 \leq x < 4$	الف) $[0, \frac{1}{3}] + [x + \frac{2}{3}] \geq 0 \rightarrow \frac{-\frac{1}{3}}{=} \frac{+\frac{1}{3}}{+} \quad Df = [\frac{1}{3}, +\infty)$ ب) $[x - \frac{1}{3}] + [-x + \frac{2}{3}] \geq 0 \rightarrow [x] + [-x] \rightarrow x \in \mathbb{Z} \rightarrow 0 \checkmark$ $\hookrightarrow x \notin \mathbb{Z} \rightarrow -1 \times$ $x \in \mathbb{Z} + \frac{1}{3} \leftarrow [x - \frac{1}{3}] \in \mathbb{Z}$ $Df = \{x \mid x = k + \frac{1}{3}, k \in \mathbb{Z}\}$
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الف) $y = \frac{\cot x + 1}{\tan x + 1}$ $\cot \leadsto x \neq k\pi$
 $\tan \leadsto x \neq k\pi + \frac{\pi}{2}$

$\tan x + 1 \neq 0 \rightarrow x \neq k\pi + \frac{\pi}{2} \rightarrow Df = \mathbb{R} - \{k\pi\} - \{k\pi + \frac{\pi}{2}\} - \{k\pi + \frac{\pi}{2}\}$

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

$k\pi - \frac{\pi}{2} \leq x \leq k\pi + \frac{\pi}{2}$

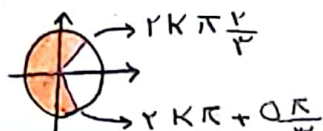


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الف) $2 \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{2} \leadsto 2k\pi + \frac{\pi}{6} \leq x \leq 2k\pi + \frac{5\pi}{6}$



ب) $1 - 2 \cos x \geq 0 \rightarrow \cos x \leq \frac{1}{2} \rightarrow 2k\pi + \frac{2\pi}{3} \leq x \leq 2k\pi + \frac{4\pi}{3}$



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الف) $-1 \leq x^2 + 3x + 1 \leq 1 \rightarrow -1 \leq x^2 + 3x + 1 \rightarrow x^2 + 3x + 2 \geq 0 \rightarrow (x+1)(x+2) \geq 0$

$x^2 + 3x + 1 \leq 1 \rightarrow x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0 \rightarrow (-\infty, -3] \cup [-1, +\infty)$
 $\leadsto Df = [-3, -1] \cup [-1, 0]$

ب) $0 \leq \sqrt{0 - 2x} + 1 \rightarrow 0 \leq 0 - 2x \leq 1 \rightarrow 0 - 2x \geq 0 \rightarrow x \leq \frac{0}{2}$

$0 - 2x \leq 1 \rightarrow 2x \geq -1 \rightarrow x \geq -\frac{1}{2} \rightarrow Df = [-\frac{1}{2}, 0]$

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الف) $1 - \log_{\frac{x}{2}} > 0 \rightarrow \log_{\frac{x}{2}} < 1 \rightarrow x < 2$
 $\log_{\frac{x}{2}} > 0 \rightarrow x > 0$
 $Df = (0, 2)$

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

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الف) $2^{\epsilon x - x^2} - 1 \geq 0 \rightarrow 2^{\epsilon x - x^2} \geq 2^0 \rightarrow \epsilon x - x^2 \geq 0 \rightarrow x^2 - \epsilon x \leq 0$

$Df = [0, \epsilon]$

ب) $\left(\frac{3x+0}{2x+\epsilon}\right)! \rightarrow 2x+\epsilon \neq 0 \rightarrow x \neq -\frac{\epsilon}{2} \leadsto \frac{3x+0}{2x+\epsilon} \in \mathbb{W} \rightarrow \frac{3x+0}{2x+\epsilon} = k$

$Df = \left\{ \left| \frac{0-\epsilon k}{2k-\epsilon} \right| \mid k \in \mathbb{W} \right\} - \left\{ -\frac{\epsilon}{2} \right\}$

$3x+0 = 2xk + \epsilon k \rightarrow x = \frac{0 - \epsilon k}{2k - \epsilon}$

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