

(۱) $f(x) = \sqrt{(a-2)x^2 + ax + b}$ $\rightarrow x=2 \rightarrow 4(a-2) + 2a + b = 0 \rightarrow 12a + b = 18$
 $\Delta \geq 0 \rightarrow \frac{-a \pm \sqrt{a^2 - 4(a-2)}}{2(a-2)} \rightarrow -a = 4a - 12 \rightarrow 5a = 12 \rightarrow a = \frac{12}{5}$
 $\Rightarrow 12(\frac{12}{5}) + b = 18 \rightarrow b = -\frac{18}{5}$
 $D_f = [2, +\infty)$

(۲) $f(x) = \sqrt{x^2 + 2x + 2 - m^2}$ $\rightarrow D_f = \mathbb{R} \rightarrow \Delta \leq 0 \rightarrow 4 - 4 + 4m^2 \leq 0 \rightarrow 4m^2 \leq 0 \rightarrow m^2 \leq 0 \rightarrow m = 0$
 $\rightarrow 1 - (-1) = 2$

(۳) $f(x) = \frac{\sqrt{4-x^2}}{[x] + [-x] + 1}$ $\rightarrow 4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2$ (I)
 $\rightarrow [x] + [-x] + 1 \neq 0 \rightarrow x \in \mathbb{Z}$ (II)
 $\rightarrow D_f = [-2, 2] \rightarrow$ عدد صحیح ۵
 ۰، ۱، ۲، -۱، -۲

(۴) الف) $y = \sqrt{x^2 + 3x}$ $\rightarrow x^2 + 3x \geq 0 \rightarrow x(x+3) \geq 0 \rightarrow x = 0, -3 \rightarrow D_f = [-3, +\infty)$
 ب) $y = \frac{(x^2-1)(x^2-3x)}{x^3-1}$ $\rightarrow \frac{(x^2-1)(x^2-3x)}{x^3-1} \geq 0 \rightarrow \frac{(x^2-1)x^2(x-3)}{x^3-1} \geq 0 \rightarrow x = -1, 0, 3 \rightarrow D_f = (-\infty, -1] \cup [0, +\infty)$

بازای $x=0$ عبارت به صفر است!
 پس در دامنه نیست!

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

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

(۶) الف) $y = \sqrt{1-x|x|}$ $\rightarrow 1-x|x| \geq 0 \rightarrow x > 0 \rightarrow 1-x^2 \geq 0 \rightarrow x^2 \leq 1 \rightarrow -1 \leq x \leq 1$ (I)
 $\rightarrow x < 0 \rightarrow 1+x^2 \geq 0$ (II)
 $\rightarrow D_f = [-1, 1]$

ب) $y = \frac{1}{\sqrt{3-|x-5|}-1}$ $\rightarrow 3-|x-5| > 1 \rightarrow |x-5| < 2 \rightarrow -2 < x-5 < 2 \rightarrow 3 < x < 7 \rightarrow D_f = (3, 7)$
 هم صورت سوال را انتخاب ننویس!

(۷) الف) $y = \frac{\sin^2 x - 1}{\cos x}$ $\rightarrow \cos x \neq 0 \rightarrow x \neq k\pi + \frac{\pi}{2} \rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}\}$
 ب) $y = \frac{\cos x}{2\cos x - 1}$ $\rightarrow 2\cos x - 1 \neq 0 \rightarrow 2\cos x \neq 1 \rightarrow \cos x \neq \frac{1}{2} \rightarrow x \neq 2k\pi \pm \frac{\pi}{3} \rightarrow D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$

(۸) الف) $y = \frac{x-3}{|2x+1| - |x+3|}$ $\rightarrow |2x+1| - |x+3| \neq 0 \rightarrow (2x+1)^2 - (x+3)^2 \neq 0 \rightarrow 4x^2 + 4x + 1 - x^2 - 6x - 9 \neq 0 \rightarrow 3x^2 - 2x - 8 \neq 0$
 $\rightarrow x^2 - 2x - 2 = 0 \rightarrow (x-4)(x+2) = 0 \rightarrow x = 4, -2 \rightarrow D_f = \mathbb{R} - \{4, -2\}$

ب) $y = \sqrt{|2x+1| - |x+3|}$ $\rightarrow |2x+1| - |x+3| \geq 0 \rightarrow (2x+1)^2 - (x+3)^2 \geq 0 \rightarrow 3x^2 - 2x - 8 \geq 0$
 $\rightarrow (x-4)(x+2) \geq 0 \rightarrow x = 4, -2 \rightarrow D_f = (-\infty, -2] \cup [4, +\infty)$

$$f(x) = \sqrt{\log_{\frac{1}{10}} \log_{\frac{1}{10}}^{(2x-1)}} \rightarrow \log_{\frac{1}{10}} \log_{\frac{1}{10}}^{(2x-1)} \geq 0 \rightarrow \log_{\frac{1}{10}}^{(2x-1)} \leq 1 \rightarrow 2x-1 \leq 10 \rightarrow 2x \leq 11 \rightarrow x \leq \frac{11}{2} \text{ (I)}$$

$$\log_{\frac{1}{10}}^{(2x-1)} > 0 \rightarrow 2x-1 > 1 \rightarrow 2x > 2 \rightarrow x > 1 \text{ (II)}$$

$$2x-1 > 0 \rightarrow 2x > 1 \rightarrow x > \frac{1}{2} \text{ (III)}$$

$$I \cap II \cap III \rightarrow D_f = (1, \frac{11}{2}]$$

$$\text{ج) } y = \log_{\frac{1}{10}}^{(2 \cos x + 1)} \rightarrow 2 \cos x + 1 > 0 \rightarrow 2 \cos x > -1 \rightarrow \cos x > -\frac{1}{2} \rightarrow D_f = (\frac{\pi}{3}, \frac{5\pi}{3})$$

$$\text{ب) } y = \sqrt{\log_{\frac{1}{10}} \frac{x-1}{x+1}} \rightarrow \log_{\frac{1}{10}} \frac{x-1}{x+1} \geq 0 \rightarrow \frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1}{x+1} - 1 \geq 0 \rightarrow \frac{x-1-(x+1)}{x+1} \geq 0 \rightarrow \frac{-2}{x+1} \geq 0$$

$$\rightarrow x+1 < 0 \rightarrow x < -1 \text{ (I)}$$

$$\rightarrow \frac{x-1}{x+1} > 0 \rightarrow \frac{-1}{x+1} > 0 \text{ (II)}$$

$$I \cap II \rightarrow D_f = (-\infty, -1)$$

(۱) چون دامنه تک بازه است پس عبارت نمی تواند یک سهم باشد و باید یک خط باشد!

$$a - 2 = 0 \rightarrow a = 2 \rightarrow f(n) = \sqrt{2n + b} \quad Df = [3, +\infty) \rightarrow f(3) + b = 0 \rightarrow b = -6$$

۳-ب) $\frac{(n^2-1)(n^3-n^2)}{(n^3-1)} \geq 0 \rightarrow \frac{(n-1)(n+1)(n^2)(n-1)}{(n-1)(n^2+n+1)} \geq 0$

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

۵۰. ریشه ندارد

Sign chart: $\begin{array}{c|cccc} & -1 & 0 & 1 & 3 \\ \hline & + & - & - & + \end{array}$

۴-ب) $3 - |n-5| \geq 0 \rightarrow |n-5| \leq 3 \rightarrow -3 \leq n-5 \leq 3 \rightarrow 2 \leq n \leq 8$

$\sqrt{3 - |n-5|} - 1 \neq 0 \rightarrow \sqrt{3 - |n-5|} \neq 1 \rightarrow 3 - |n-5| \neq 2 \rightarrow |n-5| \neq 2 \rightarrow n \neq 7, 3$

$Df = [2, 8] - \{3, 7\} = [2, 3) \cup (3, 7) \cup (7, 8]$

۴-الف) $1 - n|n| \geq 0$

$n \geq 0 \rightarrow 1 - n^2 \geq 0 \rightarrow n^2 \leq 1 \rightarrow -1 \leq n \leq 1 \xrightarrow{n \geq 0} 0 \leq n \leq 1$

$n \leq 0 \rightarrow 1 + n^2 \geq 0$

همواره مثبت

ادبته مرتد انسیم نقل تا برار رسم کنیم

$Df = (-\infty, 1] \leftarrow$