

$f(n) = \sqrt{(a-x)n^2 + an + b}$ $D_f = (3, \infty)$ $b = ?$
 چون انتگرال ده که یک بار به دست باید بیاریم تا به صورت معادله خط بیاید پس:
 $a-x = 0 \Rightarrow a = x$
 بازنویس $f(n) = \sqrt{2n+b}$ $\xrightarrow{n=3} 2 \times 3 + b = 0 \Rightarrow b = -6$

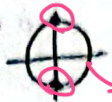
$f(n) = \sqrt{x^2 + 2x + 2 - m^2}$ $D_f = \mathbb{R}$ m کمترین مقدار - بیشترین مقدار؟
 شرط اینکه معادله درجه ۲ همیشه مثبت باشد پس:
 $\Delta = 4 - 4(1)(2-m^2) \leq 0 \Rightarrow 4 - 4 + 4m^2 \leq 0 \Rightarrow 4m^2 \leq 0 \Rightarrow m^2 \leq 0 \Rightarrow m = 0$
 $\xrightarrow{m=0} 1$ و $\xrightarrow{m=0} -1$ $1 - (-1) = 2$

$f(n) = \frac{4 - x^2}{[n] + [-n] + 1}$ $\rightarrow$ $\begin{cases} \text{I} \quad 4 - x^2 > 0 \Rightarrow x \in (-2, 2) \\ \text{II} \quad [n] + [-n] + 1 \neq 0 \Rightarrow [n] + [-n] + 1 \neq 0 \end{cases}$
 $D_f = [-2, 2]$

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

الف) $\sqrt{|x-2|-3}$ $\Rightarrow |x-2|-3 \geq 0$
 if $(x > 0) \Rightarrow x-2 \geq 0 \Rightarrow x \geq 2$ (I)
 if $(x < 0) \Rightarrow -x-1 \geq 0 \Rightarrow x \leq -1$ (II)
 $D_f = (-\infty, -1] \cup [2, \infty)$
 ب) $\sqrt{4-x-2x}$ $\Rightarrow 4-x-2x \geq 0$
 if $(x > 0) \Rightarrow 4-x \geq 0 \Rightarrow x \leq 4$ (I)
 if $(x < 0) \Rightarrow 4-x \geq 0 \Rightarrow x \leq 4$ (II)
 $D_f = [-4, 4]$

الف) $\sqrt{1-n|n|}$ $\Rightarrow 1-n|n| \geq 0$
 if $(n > 0) \Rightarrow 1-n^2 \geq 0 \Rightarrow n \leq 1$
 if $(n < 0) \Rightarrow 1+n^2 \geq 0$ همیشه درست است
 $D_f = (-\infty, 1]$
 ب) $\sqrt{3-|n-5|-1}$ $\Rightarrow 3-|n-5|-1 \geq 0$
 if $(n > 0) \Rightarrow 2-|n-5| \geq 0 \Rightarrow n < 7$ (I)
 if $(n < 0) \Rightarrow 2-|n-5| \geq 0 \Rightarrow n > 3$ (II)
 $D_f = (3, 7)$ $\subseteq D_f = \mathbb{R} - [-5, 3] \cup [7, \infty)$
 صورت سوال را اشتباه نرست! $\sqrt{3-|n-5|-1} \neq 0$

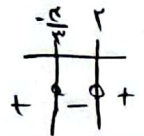
الف) $y = \frac{\sin 2n - 1}{\cos n} \rightarrow \cos n \neq 0$  $D_f = \mathbb{R} - \left\{ \frac{k\pi}{2} \right\}$ هنا نقطتي اولى بود

ب) $y = \frac{\cos n}{2\cos n - 1} \rightarrow 2\cos n - 1 \neq 0 \rightarrow \cos n \neq \frac{1}{2}$  $D_f = \mathbb{R} - \left\{ 2k\pi \pm \frac{\pi}{3} \right\}$ 1/3
 $D_f = \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{3}, 2k\pi + \frac{\pi}{3} \right\}$

الف) $y = \frac{n+3}{|2n+1| - |n+3|} \rightarrow (2n+1)^2 = (n+3)^2 \rightarrow 4n^2 + 4n + 1 = n^2 + 6n + 9 \rightarrow 3n^2 - 2n - 8 = 0$

$\Delta = 4 - 4 \cdot 3 \cdot (-8) = 100 \rightarrow n_1 = \frac{2+10}{6} = \frac{4}{3} = \boxed{\frac{4}{3}}$ $\Rightarrow D_f = \mathbb{R} - \left\{ \frac{4}{3}, 2 \right\}$
 $n_2 = \frac{2-10}{6} = -\frac{4}{3} = \boxed{-\frac{4}{3}}$

ب) $y = \sqrt{|2n+1| - |n+3|} \Rightarrow |2n+1| \geq |n+3| \rightarrow (2n+1)^2 \geq (n+3)^2 \rightarrow 4n^2 + 4n + 1 \geq n^2 + 6n + 9 \rightarrow 3n^2 - 2n - 8 \geq 0$

$3n^2 - 2n - 8 \geq 0$ $\rightarrow n = \frac{4}{3}$ $\rightarrow n = -\frac{4}{3}$  $D_f = (-\infty, -\frac{4}{3}] \cup [\frac{4}{3}, \infty)$

$f(n) = \sqrt{\log_{\log_{10} \omega} (n-1)}$ $\frac{1}{r} < 1 \rightarrow \log_{\frac{1}{r}} a \geq 0 \Rightarrow 0 < \log_{\omega}^{n-1} \leq 1 \rightarrow 1 < n-1 \leq \omega$

$\rightarrow 1 < n \leq \omega \rightarrow D_f = (1, \omega]$

الف) $y = \log^{(\cos n + 1)}$ $\rightarrow \cos n + 1 > 0 \rightarrow \cos n > -1$  $D_f = (2k\pi - \frac{\pi}{2}, 2k\pi + \frac{\pi}{2})$

ب) $y = \sqrt{\log \frac{n-1}{n+1}}$ $\rightarrow \frac{n-1}{n+1} > 0 \rightarrow \frac{n-1}{n+1} > 0 \Rightarrow D_f = (-\frac{1}{2}, 1) \cup (1, \infty)$

$\log \frac{n-1}{n+1} \geq 0 \Rightarrow \frac{n-1}{n+1} \geq 1 \Rightarrow \frac{(n-1) - (n+1)}{n+1} \geq 0 \Rightarrow \frac{-2}{n+1} \geq 0 \Rightarrow \frac{-1}{n+1} \geq 0$

$\Rightarrow D_f = (-\frac{1}{2}, 1)$

ج- ٣ $\frac{(x^2-1)(x^2-x^2)}{(x^2-1)} \geq 0 \rightarrow \frac{(n-1)(n+1)(n^2)(n-5)}{(n-1)(n^2+n+1)} \geq 0$

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

نقطه نشانه

$\begin{array}{ccccccc} & -1 & 0 & 3 & & & \\ + & 0 & - & 0 & - & 0 & + \end{array}$

ج- ٤ $3 - |n-5| \geq 0 \rightarrow |n-5| \leq 3 \rightarrow -3 \leq n-5 \leq 3 \rightarrow 2 \leq n \leq 8$

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

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

الف- ٤ $1 - n|n| \geq 0$

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

همواره مثبت ✓

الیه مرتوانیم فعل تا برآرسد کنیم

Def $(-\infty, 1] \leftarrow$

الف- ٥ $y = \frac{\sin^2 n - 1}{\cos n} \rightarrow \cos n \neq 0 \rightarrow$

$\rightarrow \text{Def} = \mathbb{R} - \left\{kn + \frac{\pi}{2}\right\}$