

مثال $f(n) = \sqrt{(a-1)n^2 + an + b}$ $\leadsto p_f = [-\infty, \infty) \rightarrow$ جوابی ندارد و مقادیر حقیقی نیست
 $a-1 < 0 \rightarrow a < 1$ $\leftarrow$ است پس باید درجه اول باشد
 $an + b \geq 0 \rightarrow 4 + b \geq 0 \rightarrow b \geq -4$ $\boxed{b \geq -4}$

$f(n) = \sqrt{\frac{n^2 + 4n + 4 - m^2}{(n-2)^2}}$ $\} \rightarrow n^2 + 4n + 4 - m^2 \geq 0 \rightarrow (n+1)^2 - m^2 \geq 0 \rightarrow m = \pm 1$
 $\boxed{m = \pm 1}$

$f(n) = \frac{\sqrt{4-n^2}}{[n] + [-n] + 1}$ $\leadsto 4-n^2 \geq 0 \rightarrow n^2 \leq 4 \rightarrow -2 \leq n \leq 2$ $\textcircled{2}$
 $[n] + [-n] + 1 \neq 0 \rightarrow$ برای n صحیح
 $[n] + [-n] \neq -1$ صفر نمی شود.
 $[n] + [-n] \begin{cases} 2003 \rightarrow 0 \\ \text{غیر} \rightarrow -1 \end{cases}$
 $\{-2, -1, 0, 1, 2\}$ $\boxed{\text{در این مجموعه}}$

الف) $y = \sqrt{n^2 + 4n}$ $\rightarrow n^2(n+4) \geq 0$ $\frac{n}{y} \mid \frac{-n^2}{-4n+4}$ $p_f = [-4, \infty)$

ب) $y = \sqrt{\frac{(n^2-1)(n^2-4n^2)}{n^2-1}}$ $\rightarrow \frac{(n-1)(n+1)(n^2)(n-2)}{(n-1)(n^2+n-1)} \geq 0$ $\textcircled{15}$
 $p_f = (-\infty, -1] \cup [0, \infty)$
 به ازای $n=0$ عبارت برابر 0 است
 پس رد دامنه هست!

الف) $y = \sqrt{|n-2| - 4}$ $\rightarrow |n-2| - 4 \geq 0 \rightarrow |n-2| \geq 4 \rightarrow n \geq 6$
 $n-2 \leq -4 \rightarrow n \leq -2$

ب) $y = \sqrt{4 - |2-n|}$ $\leadsto 4 - |2-n| \geq 0 \rightarrow |2-n| \leq 4$
 $-4 \leq 2-n \leq 4 \rightarrow \boxed{-2 \leq n \leq 6}$

$$ii) y = \sqrt{1 - x/n} \rightarrow 1 - x/n \geq 0 \rightarrow x/n \leq 1 \rightarrow \boxed{x \leq n} \quad (6)$$

$$i) y = \frac{1}{\sqrt{e^{n-\alpha}-1}} \rightarrow e^{n-\alpha} > 0 \rightarrow |n-\alpha| < \infty \rightarrow -\infty < n-\alpha < \infty \quad (1, \sqrt{e})$$

$$\sqrt{e^{n-\alpha}-1} - 1 \neq 0 \rightarrow e^{n-\alpha} \neq 0$$

$$n-\alpha \neq r \rightarrow n \neq r \quad (2)$$

$$P_f = \{r, n\} - \{0\} \quad (3)$$

$\frac{1}{\sqrt{e^{n-\alpha}-1}} - 1 < 0$
 $|n-\alpha| < r \Rightarrow n < r$
 $\hookrightarrow n < e$

$$ii) \frac{\sin^n x - 1}{\cos x} \rightarrow \cos x \neq 0 \rightarrow \boxed{D_f = R - \left\{ \frac{\pi}{2} + k\pi / k \in \mathbb{Z} \right\}} \quad (4)$$

$$i) \frac{\cos x}{\cos x - 1} \rightarrow \cos x - 1 \neq 0 \rightarrow \cos x \neq 1 \rightarrow \boxed{D_f = R - \left\{ 2k\pi / k \in \mathbb{Z} \right\}} \quad (5)$$

$$ii) \frac{n\pi}{|x_{n+1}| - |n\pi|} \rightarrow (|x_{n+1}| - |n\pi|) \neq 0 \rightarrow |x_{n+1}| \neq |n\pi|$$

$$\begin{aligned} & \leftarrow x^n - x^{n-1} \neq 0 \quad \leftarrow (x^n + x^{n+1}) \neq x^n + x^{n+2} \\ & \text{multiplying by } \frac{1}{x} \quad (x + \frac{x^2}{x}) \neq 0 \rightarrow x \neq -\frac{x^2}{x} \end{aligned}$$

$$\boxed{P_f = R - \left\{ -\frac{x^2}{x}, x \right\}} \quad (6)$$

$$i) y = \sqrt{|x_{n+1}| - |n\pi|} \rightarrow |x_{n+1}| \geq |n\pi|$$

$$\hookrightarrow (x-y)(n\pi) \geq 0$$

$$\boxed{P_f = \left(-\infty, -\frac{x}{y} \right] \cup [n\pi, \infty) \quad (7)$$

$$\frac{x}{y} = \frac{-\frac{x^2}{x}}{y} = -\frac{x}{y}$$

$$(x-1) \log_{10}^{x_{n-1}} > 0 \rightarrow x_{n-1} > 1 \rightarrow n > 1 \quad (1, 8)$$

$$\log_{10}^{x_{n-1}} \geq 0 \rightarrow \log_{10}^{(x_{n-1})} \leq 1 \rightarrow x_{n-1} \leq 10 \rightarrow \boxed{n \leq 10} \quad (8)$$

$$\hookrightarrow x_{n-1} > 0 \rightarrow \boxed{n > \frac{1}{x_{n-1}}} \rightarrow \boxed{P_f = \left(\frac{1}{x_{n-1}}, \infty \right)} \quad (9)$$

$$9) \log_{\frac{1}{5}} \log_5^{n-1} \rightarrow r_{n-1} > 0 \rightarrow n > \frac{1}{5}$$

$$\log_5^{n-1} > 0 \rightarrow r_{n-1} > 0 \rightarrow r_{n-1} > 1 \rightarrow n > 1$$

$$\log_{\frac{1}{5}} \log_5^{n-1} \geq 0 \xrightarrow[\text{منبني ههرا حوت بوض منبني ههرا!}]{} \log_5^{n-1} \leq 5 \rightarrow \log_5^{n-1} \leq 1 \rightarrow r_{n-1} \leq 5 \rightarrow r_n \leq 4 \rightarrow n \leq 3$$

$$\hookrightarrow D_f = (1, 3]$$

(الف) $g = \log(\cos(n+1)) \rightarrow \cos(n+1) > 0 \rightarrow \cos(n) > -\frac{1}{2}$

$$n \in \left(-\frac{2\pi}{3} + 2k\pi, \frac{2\pi}{3} + 2k\pi\right)$$

(ب) $g = \sqrt{\log \frac{n-1}{n+1}}$ $\rightarrow \log \frac{n-1}{n+1} \geq 0$

$$\frac{n-1}{n+1} \geq 0 \rightarrow \frac{n-1}{n+1} \geq 0 \rightarrow \frac{(n-1)(n+1)}{(n+1)} \geq 0$$

$$\frac{n-1}{n+1} \geq 0 \rightarrow \frac{n-1}{n+1} \geq 0 \rightarrow \frac{n-1}{n+1} \geq 0 \rightarrow \frac{n-1}{n+1} \geq 0$$

$$(-\infty, -1) \cup [0, \infty)$$

$$[1, \infty)$$

$$[1, \infty) = D_f$$

$$10- \text{ب}) \frac{n-1}{n+1} > 0 \rightarrow n > -1 \leq n < -1$$

$$\log_{\frac{n+1}{1}} \geq 0 \rightarrow \frac{n-1}{n+1} \geq 1 \rightarrow \frac{n-1}{n+1} \geq 1 \rightarrow \frac{n-1}{n+1} - 1 \geq 0 \rightarrow \frac{n-1-n-1}{n+1} \geq 0 \rightarrow \frac{-2}{n+1} \geq 0$$

$$n+1 < 0 \rightarrow n < -1 \rightarrow D_f = (-\infty, -1)$$

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

$\Delta \leq 0$
 $\begin{array}{ccccccc} & -1 & & * & & * & & 3 \\ + & | & - & | & - & | & - & | & + \\ & 0 & & 0 & & 0 & & 0 & \end{array}$

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

$$4- \text{ب}) 3 - |n-5| \geq 0 \rightarrow |n-5| \leq 3 \rightarrow -3 \leq n-5 \leq 3 \rightarrow 2 \leq n \leq 8$$

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

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