

* چون رابطه ما به حالت های مطلوب منجر شود پس یک خط است:

$$a-2=0 \rightarrow a=2$$

$$f(x) = \sqrt{2x+b} \rightarrow 2x+b \Rightarrow \frac{1}{2}b=0 \rightarrow b=-2$$

$$\Delta \leq 0 \rightarrow 4 - 4(2-m^2) \leq 0 \rightarrow 4 - 8 + 4m^2 \leq 0 \rightarrow 4m^2 - 4 \leq 0 \rightarrow m^2 - 1 \leq 0$$

$$m^2 \leq 1 \rightarrow -1 \leq m \leq 1 \rightarrow 1 - (-1) = 2$$

$$\left. \begin{array}{l} \textcircled{1} 4 - x^2 \geq 0 \rightarrow 4 \geq x^2 \rightarrow 2 \geq x \geq -2 \\ \textcircled{2} \text{ if } x \in \mathbb{Z} \rightarrow [x] + [-x] + 1 = 1 \rightarrow \checkmark \\ \text{if } x \in \mathbb{R} - \mathbb{Z} \rightarrow [x] + [-x] + 1 = 0 \rightarrow \text{و} \end{array} \right\} \begin{array}{l} -2, -1, 0, 1, 2 \\ \text{در} \end{array}$$

الف) $x^3 + 3x^2 \geq 0 \rightarrow x^2(x+3) \rightarrow \begin{array}{c} -3 \\ - \quad + \quad + \end{array} \quad D_f: [3, +\infty)$

ب) $y = \sqrt{\frac{(x^2-1)(x^3-x^2)}{x^3-1}} \rightarrow \begin{array}{l} x^2-1=0 \rightarrow x=1, -1 \\ x^3-1=0 \rightarrow x=1 \\ x^3-2x^2=0 \rightarrow x^2(x-2)=0 \rightarrow x=0^*, 2 \end{array}$

$\begin{array}{c} -1 \quad 0^* \quad 1 \quad 2 \\ + \quad - \quad - \quad + \end{array} \quad D_f: (-\infty, -1] \cup \{0\} \cup [2, +\infty)$

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

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

الف) $\sqrt{1-x|x|} \rightarrow 1-x|x| \geq 0 \rightarrow 1 \geq x|x| \rightarrow \begin{cases} x \geq 0 \rightarrow 1 \geq x^2 \rightarrow 1 \geq x \geq -1 \\ 1 \geq x \geq 0 \end{cases}$
 $D_f: (-\infty, 1]$

ب) $\frac{1}{\sqrt{3-|x-2|}-1} \rightarrow \begin{cases} 3-|x-2| \geq 0 \rightarrow 3 \geq |x-2| \rightarrow 3 \geq x-2 \geq -3 \rightarrow 5 \geq x \geq -1 \\ \sqrt{3-|x-2|}-1 \neq 0 \rightarrow \sqrt{3-|x-2|}+1 \neq 3-|x-2|+1 \rightarrow 3-|x-2| \neq 1 \\ |x-2| \neq 2 \rightarrow x-2 = \pm 2 \rightarrow \begin{cases} x-2=2 \rightarrow x=4 \\ x-2=-2 \rightarrow x=0 \end{cases} \end{cases}$
 $D_f: [2, 5] - \{0, 4\}$

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

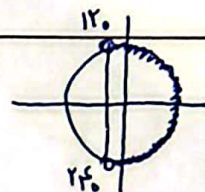
ب) $\frac{\cos x}{y(\cos x - 1)} \Rightarrow y \cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{y} \rightarrow D_f: \mathbb{R} - \{y k\pi + \frac{\pi}{y}, y k\pi - \frac{\pi}{y}\}$

الف) $\frac{x+3}{|2x+1|-|x+3|} \rightarrow |2x+1|-|x+3|=0 \rightarrow |2x+1|=|x+3| \rightarrow (2x+1)^2=(x+3)^2$
 $|2x+1|-|x+3| \rightarrow 4x^2+4x+1=x^2+6x+9 \rightarrow 3x^2-2x-8=0 \rightarrow x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$
 $x = \frac{-2 \pm \sqrt{4+96}}{6} = \frac{-2 \pm 10}{6} \rightarrow \begin{cases} \frac{8}{6} = \frac{4}{3} \\ \frac{-12}{6} = -2 \end{cases} \rightarrow D_f: \mathbb{R} - \{-\frac{4}{3}, 2\}$

ب) $\sqrt{|2x+1|-|x+3|} \rightarrow |2x+1|-|x+3| \geq 0 \rightarrow |2x+1| \geq |x+3| \rightarrow (2x+1)^2 \geq (x+3)^2 \rightarrow 3x^2-2x-8 \geq 0$
 $3x^2-2x-8 \geq 0 \rightarrow \frac{-2}{3} \leq x \leq 4 \rightarrow D_f: [-\frac{2}{3}, 4]$

① $y^x - 1 > 0 \rightarrow y^x > 1 \rightarrow x > \frac{1}{y}$
 ② $\log_y^{y^{x-1}} > 0 \rightarrow y^{x-1} > 1 \rightarrow x-1 > 1 \rightarrow x > 2$
 ③ $\log_{y/2}^{\log_y^{y^{x-1}}} \geq 0 \rightarrow \log_y^{y^{x-1}} \leq 1 \rightarrow y^{x-1} \leq y \rightarrow x-1 \leq 1 \rightarrow x \leq 2$
 $D_f: (1, 2]$

الف) $\log(y \cos x) \rightarrow y \cos x > 0 \rightarrow \cos x > \frac{-1}{y}$
 $D_f: \mathbb{R} - [y k\pi + \frac{\pi}{y}, y k\pi + \frac{5\pi}{y}]$



ب) $\sqrt{\log \frac{n-1}{n+1}}$ ① $\frac{n-1}{n+1} > 0 \rightarrow \frac{-1}{+} < \frac{1}{+} \rightarrow (-\infty, -1) \cup (1, +\infty)$

② $\log \frac{n-1}{n+1} \geq 0 \rightarrow \frac{n-1}{n+1} \geq 1 \rightarrow \frac{n-1-n-1}{n+1} \geq 0 \rightarrow \frac{-2}{n+1} \geq 0 \rightarrow \frac{-1}{+} < \frac{-1}{+}$
 ① ② $\rightarrow D_f: (-\infty, -1)$