

$$y = \frac{\sin x + 1}{\sin^2 x - 1}$$



$$\sin^2 x - 1 \neq 0$$

$$\sin^2 x \neq 1$$

$$\sin x \neq \pm 1$$

$$\sin x \neq \pm \frac{\sqrt{2}}{2}$$

$$x \neq \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$

$$\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$

$$\Rightarrow D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right\}$$

$$= \{ k\pi \pm \frac{\pi}{4} \}$$

← جواب

$$y = \frac{1}{\sqrt{x^2 - 1} - \frac{1}{x}}$$

$$\Rightarrow x^2 - 1 - \frac{1}{x} > 0$$

$$x^2 - 1 > \frac{1}{x}$$

$$D_f = \left(\frac{1}{x}, +\infty \right) \cup \left(-\infty, -\frac{1}{x} \right) \mid x^2 - 1 > \frac{1}{x}$$

$$x^2 - 1 < -\frac{1}{x}$$

$$x < -\frac{1}{x}$$

$$x^2 - 1 > \frac{1}{x}$$

$$x > \frac{1}{x}$$

← جواب

$$a) y = \sqrt{1 - x^2}$$

$$b) y = \sqrt{\frac{|x|}{|x|}}$$

$$1 - x^2 \geq 0$$

$$|x| \leq 1$$

$$|x| \leq 1$$

$$|x| \neq 0$$

$$x \neq 0$$

$$\frac{|x|}{|x|} \geq 0 \quad \checkmark$$

$$D_f = \mathbb{R} - \{0\}$$

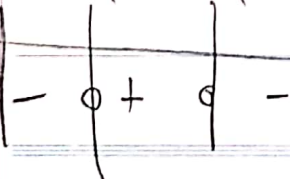
$$D_f = -1 \leq x \leq 1$$

حل قسم 6 اول

$$y = \sqrt{1 - x^2}$$

$$1 - x^2 \geq 0 \Rightarrow x(\sqrt{1 - x^2}) = x(\sqrt{1 - x^2})(\sqrt{1 + x^2}) \geq 0$$

$$x$$



$$\Rightarrow D_f = [-1, 1]$$

$$c) y = \sqrt{|x| - 9}$$

$$|x| - 9 \geq 0$$

$$|x| \geq 9 \Rightarrow |x| \geq 9 \Rightarrow x \geq 9, x \leq -9$$

$$D_f = [-9, +\infty) \cup (-\infty, -9]$$

$$* 1) \sqrt{\frac{\sqrt{n+1}}{\sqrt{n-1}}} \Rightarrow D_f = \mathbb{R} - \{\pm 1\}$$

$$\sqrt{n-1} \neq 0$$

$$\sqrt{n} \neq 1$$

$$n \neq \pm 1$$

سوال مستقیم ←

$$2) y = \frac{\sin x}{x \cos x - 1}$$



$$x \cos x - 1 \neq 0$$

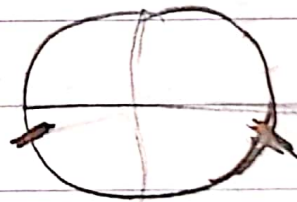
$$x \cos x \neq 1$$

$$\cos x \neq \frac{1}{x}$$

$$x \neq \frac{\pi}{2}, \frac{3\pi}{2}$$

$$\Rightarrow D_f = \mathbb{R} - \{x \mid x \neq \frac{\pi}{2}, \frac{3\pi}{2}\}$$

$$3) \frac{\cos x + 1}{x \sin x + 1} \Rightarrow \begin{aligned} x \sin x + 1 &\neq 0 \\ x \sin x &\neq -1 \\ \sin x &\neq -\frac{1}{x} \end{aligned}$$



$$x \neq \frac{\pi}{2}, \frac{3\pi}{2} \Rightarrow D_f = \mathbb{R} - \{x \mid x \neq \frac{\pi}{2}, \frac{3\pi}{2}\}$$

$$4) y = \frac{\tan x + 1}{\cot x - 1} \Rightarrow \begin{aligned} \cot x - 1 &\neq 0 \\ \cot x &\neq 1 \end{aligned}$$



$$x \neq \frac{\pi}{4}, \frac{5\pi}{4}$$

$$\tan x = \frac{\sin x}{\cos x}$$

$$\cos x \neq 0$$

$$x \neq \frac{\pi}{2}, \frac{3\pi}{2}$$

$$\Rightarrow D_f = \mathbb{R} - \{x \mid x \neq \frac{\pi}{2}, \frac{3\pi}{2}\}$$

$$\div) \sqrt{\frac{x^2-14}{x^2-\infty+\epsilon}} \Rightarrow \begin{array}{l} x^2-4x=0 \\ x^2=14 \\ x=\sqrt{14} \\ x=-\sqrt{14} \end{array}$$

$$(x-1)(x-\epsilon) \quad \begin{array}{c} -\epsilon \quad 1 \quad \epsilon \quad \epsilon^* \end{array}$$

$$\Rightarrow \begin{array}{c} x \\ | \quad | \quad | \quad | \quad | \\ + \quad - \quad - \quad + \quad + \end{array} \Rightarrow Df = (-\infty, -\epsilon] \cup (1, \epsilon) \cup (\epsilon, +\infty)$$

سوال بنیم ←

$$\text{الف) } \sqrt{\epsilon - \sqrt{2-x}}$$

$$\epsilon - \sqrt{2-x} > 0$$

$$2-x > 0$$

$$\boxed{x < 2}$$

$$\epsilon > \sqrt{2-x}$$

$$14 > 2-x$$

$$\Rightarrow Df = [-1, 2]$$

$$\boxed{x > -1, \epsilon}$$

$$\text{ب) } \sqrt{3 - \sqrt{x-2}}$$

$$3 - \sqrt{x-2} > 0$$

$$x-2 > 0$$

$$\sqrt{x-2} < 3$$

$$x > 2$$

$$x-2 < 9$$

$$\Rightarrow Df = [2, 11]$$

$$\boxed{x < 11, \epsilon}$$

سوال هفتم ←

$$\text{الف) } y = \sqrt[3]{\frac{|x|+1}{|x|-3}} \Rightarrow Df = \mathbb{R} - \{\pm 3\}$$

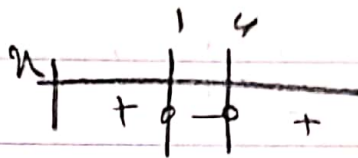
$$|x|-3 \neq 0$$

$$|x| \neq 3$$

$$x \neq -3, 3$$

$$\Rightarrow x^2 - 5x + 4 < 0$$

$$(x-1)(x-4) < 0 \Rightarrow$$



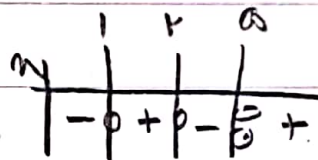
$$Pf \Rightarrow [1, 4]$$

$$(x-1)(x-4)$$

← pseudo

$$Cv) \frac{x^2 - 5x + 4}{x - 5} < 0 \Rightarrow$$

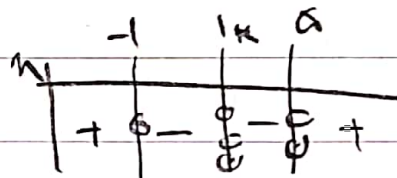
$$\frac{x-5}{x-5}$$



$$Pf \Rightarrow (-\infty, 1) \cup (4, 5)$$

$$Cv) \frac{x^2 - 1}{x^2 - 4x + 4} > 0$$

$\Rightarrow$



$$x^2 - 1 = 0$$

$$x^2 = 1$$

$$x = \pm 1$$

$$(x-1)(x-4)$$

$$\Rightarrow Pf = (-\infty, -1] \cup (4, +\infty)$$

← pseudo

$$Cv) \sqrt{\frac{x^2 - 1}{x^2 - x}} \Rightarrow x^2 - 1 = 0$$

$$x^2 = 1$$

$$x = \pm 1$$

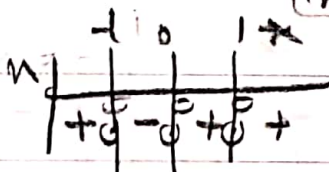
$$x^2 - x = 0$$

$$x(x^2 - 1) = 0$$

$$x = 0 \text{ or } x^2 - 1 = 0$$

$$x^2 = 1$$

$$x = \pm 1$$

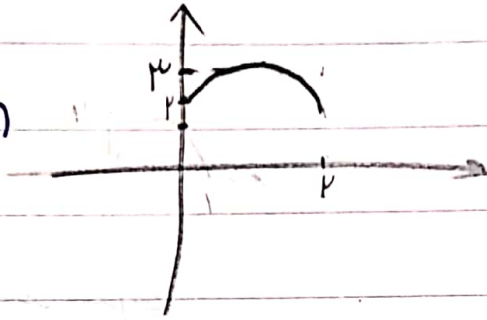


$\Rightarrow$

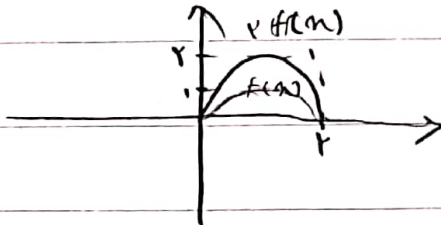
$$\Rightarrow Pf = \mathbb{R} - [-1, 0] \cup \{1\}$$

سوال اول ←

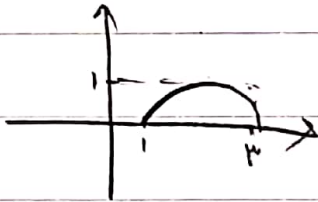
ا) ان



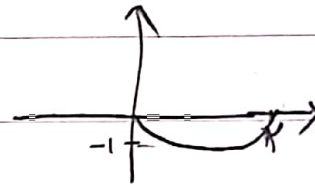
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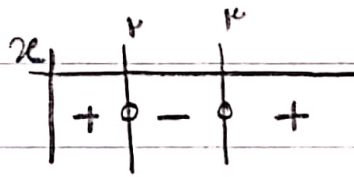
د) ان



سوال دوم ←

$$ا) x^2 - 5x + 4 > 0$$

$$(x-1)(x-4) > 0 \Rightarrow$$

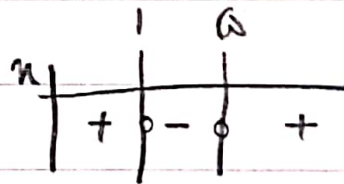


$$\Rightarrow (-\infty, 1) \cup (4, +\infty)$$

Df =

$$ب) x^2 - 4x + 4 < 0$$

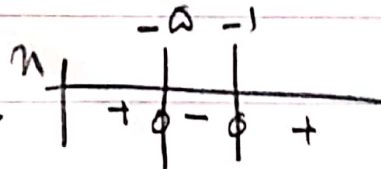
$$(x-1)(x-4) < 0 \Rightarrow$$



$$Df \Rightarrow (1, 4)$$

$$ج) x^2 + 4x + 4 > 0$$

$$(x+1)(x+4) > 0$$



$$Df \Rightarrow (-\infty, -4] \cup [-1, +\infty)$$