

تمرین ریاضی

$$f(x) = \sqrt{(a-2)x^2 + 4x + b}$$

$$a-2 \geq 0 \Rightarrow a \geq 2$$

میان دامنه باز است

$$\sqrt{2a+b}$$

$$2a+b \geq 4 \Rightarrow b \geq 4-2a$$

$$f(x) = \sqrt{x^2 + 2x + 2 - m^2}$$

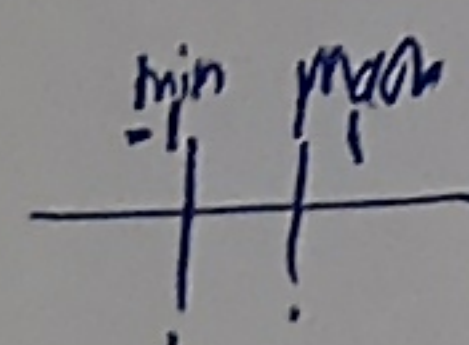
$$\Delta \geq 0 \rightarrow \begin{cases} \Delta \geq 0 \\ \Delta \leq 0 \end{cases}$$

$$m^2 \leq 2$$

$$(m^2-1) \leq 0 \rightarrow m^2-1 \neq 0$$

$$m^2 \neq 1 \rightarrow m \neq \pm 1$$

$$1 - (-1) = 2$$



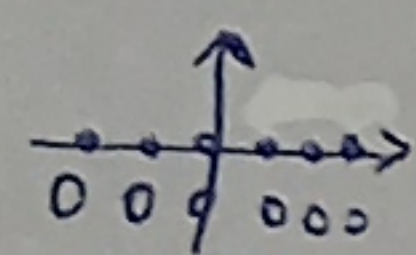
$$\frac{\sqrt{2-x^2}}{\sqrt{x} + \sqrt{-x} + 1}$$

$$2-x^2 \geq 0 \rightarrow x^2 \leq 2 \Rightarrow -\sqrt{2} \leq x \leq \sqrt{2}$$

دامنه = 2

استمرار

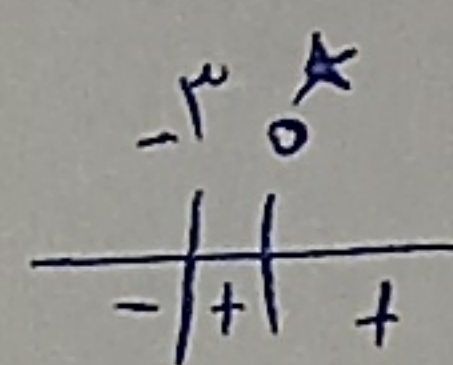
$$D_f = \{-\sqrt{2}, -1, 0, 1, \sqrt{2}\}$$



$$f(x) = \sqrt{x^3 + 3x^2}$$

$$x^3 + 3x^2 \geq 0 \rightarrow x^2(x+3) \geq 0$$

$$\downarrow \quad \downarrow$$



$$D_f = [-3, +\infty)$$

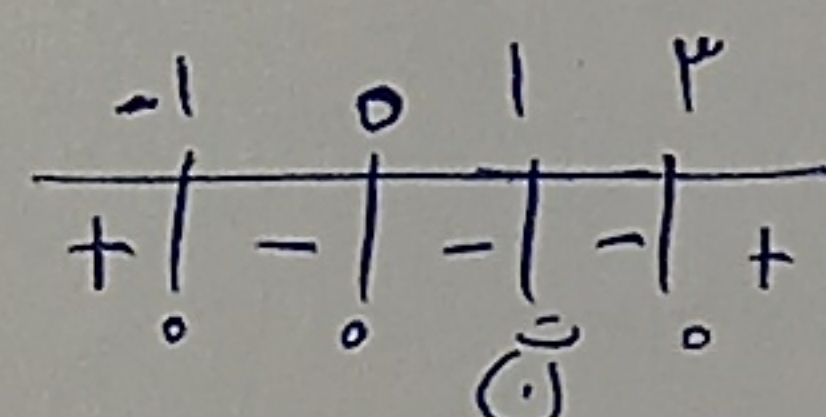
$$f(x) = \sqrt{\frac{(x^2-1)(x^3-3x^2)}{x^3-1}}$$

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

$$x^2 \neq 0 \leq 1 \Rightarrow x \neq 1$$

$$x^2(x-3) \leq 0$$

$$x \neq 0 \quad x \neq 3$$



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

$$f(x) = \sqrt{|x-2| - 3}$$

$$|x-2| - 3 \geq 0$$

$$|x-2| \geq 3 \rightarrow x \leq -1 \text{ or } x \geq 5$$

$$|x-2| \geq 3 \rightarrow x \leq -1 \text{ or } x \geq 5$$

$$D_f = (-\infty, -1] \cup [5, +\infty)$$

$$f(x) = \sqrt{2 - |x-4|}$$

$$2 - |x-4| \geq 0$$

$$|x-4| \leq 2 \rightarrow -2 \leq x-4 \leq 2$$

$$x \geq 2 \text{ or } x \leq 6$$

$$D_f = [2, 6]$$

$$f(x) = \sqrt{1 - |x|}$$

$$1 - |x| \geq 0$$

$$|x| \leq 1 \rightarrow D_f = [-1, 1]$$

$$D_f = [-1, 1] \cup [2, 3]$$

$$f(x) = \frac{1}{\sqrt{3 - |x-1| - 1}}$$

$$3 - |x-1| - 1 \geq 0$$

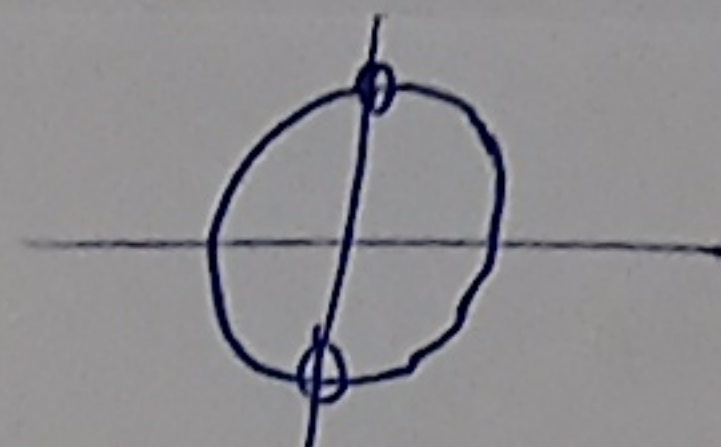
$$|x-1| \leq 2$$

$$-2 \leq x-1 \leq 2 \rightarrow -1 \leq x \leq 3$$

$$D_f = [-1, 1] \cup [2, 3]$$

الف) $y = \frac{\sin^2 \alpha - 1}{\cos \alpha}$

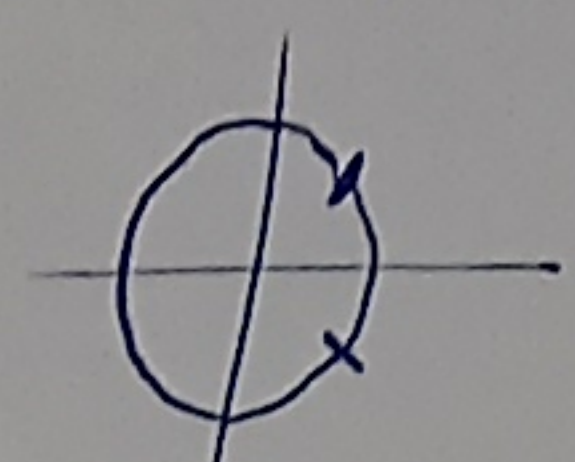
$\cos \alpha \neq 0$
 $Df = \mathbb{R} - \{k\pi + \pi/2\}$



(10)

ب) $y = \frac{\cos \alpha}{2 \cos \alpha - 1}$

$2 \cos \alpha - 1 \neq 0$
 $\cos \alpha \neq 1/2$



$Df = \mathbb{R} - \{2k\pi \pm \pi/3\}$

الف) $y = \frac{n+3}{|2n+1| - |n+3|}$

$2n+1 \neq n+3 \rightarrow n \neq 2$

$|2n+1| \neq |n+3| \rightarrow 2n+1 \neq -n-3 \rightarrow n \neq -4/3$

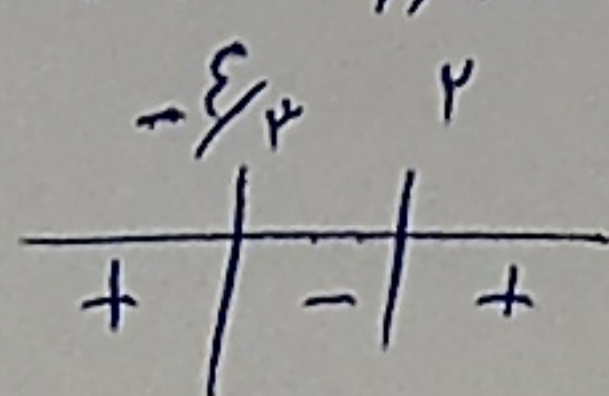
$Df = \mathbb{R} - \{2, -4/3\}$

(11)

ب) $y = \sqrt{|2n+1| - |n+3|}$

$|2n+1| \geq |n+3|$

$(2n+1)^2 \geq (n+3)^2 \rightarrow 4n^2 + 4n + 1 \geq n^2 + 6n + 9$



$3n^2 - 2n - 8 \geq 0$

$(3n+8)(n-2) \geq 0$

$Df = [-8/3, 2] \cup [2, +\infty)$

$f(n) = \sqrt{\log_{0.5}^{(2n-1)} \log_{0.5}^{(2n-1)}}$

$\log_{0.5}^{(2n-1)} \log_{0.5}^{(2n-1)} \geq 0$

$2n-1 \geq 0$

$n \geq 1/2$

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$\log_{0.5}^{2n-1} \geq 0$

$2n-1 \geq 1 \rightarrow n \geq 1$

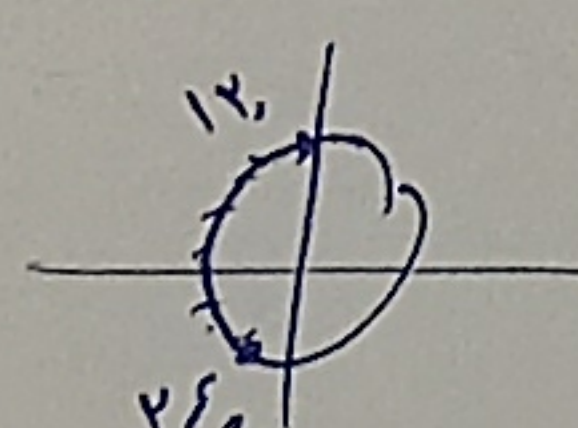
$Df = [1, +\infty)$

$\log_{0.5}^{2n-1} \geq 1$

$2n-1 \geq 1 \rightarrow 2n \geq 2 \rightarrow n \geq 1$

الف) $y = \log(2 \cos \alpha + 1)$

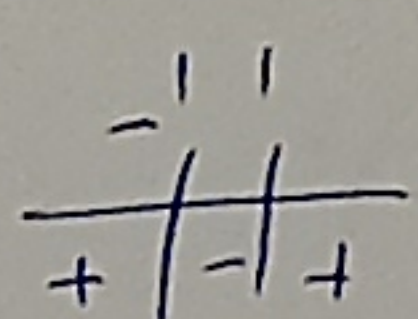
$2 \cos \alpha + 1 \geq 0 \rightarrow \cos \alpha \geq -1/2$



$Df = [2k\pi - \pi/3, 2k\pi + \pi/3]$

ب) $y = \sqrt{\log \frac{n-1}{n+1}}$

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



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

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

$n < -1$

$Df = (-\infty, -1)$

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(14)