

14, 15

المسألة

تطلب

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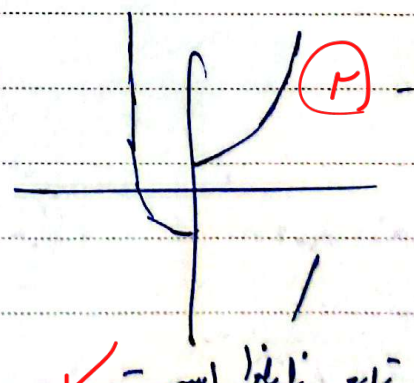
$$f(x) = \begin{cases} x^2 - 1 & x \geq 1 \\ x^2 - 1 & x < 1 \end{cases} \Rightarrow f(x) = \begin{cases} x^2 - 1 \\ x^2 - 1 \end{cases}$$

$$y = \sqrt{f(x) - f(x_0)} \Rightarrow f(x) - f(x_0) \geq 0$$

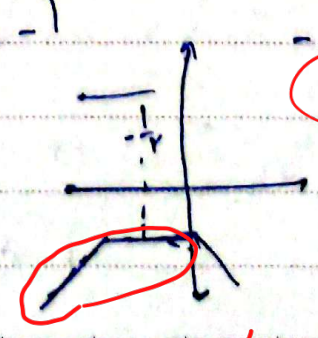
$$x_0 = 1 \Rightarrow f(x) \geq f(x_0) \Rightarrow x \in (-\infty, 1] \checkmark$$

$$f(x) = (x^2 - 1)^2 \Rightarrow f(x) \geq 0$$

$$f(x) < f(x_0) \Rightarrow f(x) < 0 \Rightarrow x \in (0, 1) \checkmark$$

$$y = \sqrt{x^2 - \frac{1}{2}} \Rightarrow \begin{cases} x^2 - \frac{1}{2} \geq 0 & x \geq 0 \\ -x^2 - \frac{1}{2} & x < 0 \end{cases}$$


تابع

$$f(x) = \frac{x^2 - 1}{x^2 + 1} \Rightarrow \begin{cases} \frac{x^2 - 1}{x^2 + 1} \geq 0 & x \geq 0 \Rightarrow x^2 - 1 \geq 0 \Rightarrow x \geq 1 \\ \frac{x^2 - 1}{x^2 + 1} < 0 & -1 < x < 0 \Rightarrow x^2 - 1 < 0 \Rightarrow -1 < x < 1 \\ \frac{x^2 - 1}{x^2 + 1} \leq 0 & x \leq -1 \Rightarrow x^2 - 1 \leq 0 \Rightarrow x \leq -1 \end{cases}$$


لغة الجبر؟ $u = 0 \in (-\infty, 0]$

$(a^2 - 2a - 1) > 0$ by $\frac{1}{a^2 - 2a - 1} \Rightarrow (a-3)(a+1)$

$a^2 - 2a - 1$, $\frac{-2}{+ \quad - \quad +}$

$(-\infty, -1) \cup (3, \infty)$

$a^2 - 2 > 1 \Rightarrow a^2 > 3 \Rightarrow a > \sqrt{3} \cup a < -\sqrt{3}$

$a^2 - 2 \geq 1 \Rightarrow a^2 \geq 3 \Rightarrow a \geq \sqrt{3} \cup a \leq -\sqrt{3}$

$a \in (-\infty, -\sqrt{3}] \cup [\sqrt{3}, \infty)$

0

$f(x) = x\sqrt{x-2}$, $f \circ f(x) \in f(x) \Rightarrow x\sqrt{x-2} \leq \sqrt{x-2}$

$\Rightarrow x \leq 1$, $x \in \mathbb{R}^+$, $f(x) \in \mathbb{R}^+$ $\Rightarrow x\sqrt{x-2} \geq 0$

$\Rightarrow \sqrt{x} \geq 1 \Rightarrow x \geq 1$

$\sqrt[3]{4\cos^2 x} \rightarrow \cos^2 x = 0 \Rightarrow -1$, $\sqrt[3]{4\cos^2 x} \rightarrow \cos^2 x = 1 \Rightarrow 1$

$$f(x) = x^A \cdot \frac{1}{x^A} \Rightarrow \text{if } A < -1 \Rightarrow f(x) = -\frac{x^A}{A}$$

$$\text{if } A = -1 \Rightarrow f(x) = \frac{10}{1x}$$

$$\Rightarrow Rf = \left[-\frac{x}{\epsilon}, \frac{10}{\epsilon}\right]$$

$$=, \frac{10}{\epsilon} \cdot \frac{x}{x} = \frac{10 \cdot x}{\epsilon} \cdot \frac{x}{x} \checkmark$$

$$f(x) = x \cdot [x] \cdot x \Rightarrow -x \leq f(x) \leq x$$

(2) -h

$$x \in [x] \leq 1 \Rightarrow y \circ f(x) = \frac{x \cdot f(x) - f(x)}{x} \Rightarrow \text{if } A = -1 \Rightarrow -\frac{x}{\epsilon}$$

$$\text{if } A = -1 \Rightarrow -\frac{10}{x} \Rightarrow x \circ f = \left[-\frac{10}{x}, -\frac{x}{\epsilon}\right] \checkmark$$