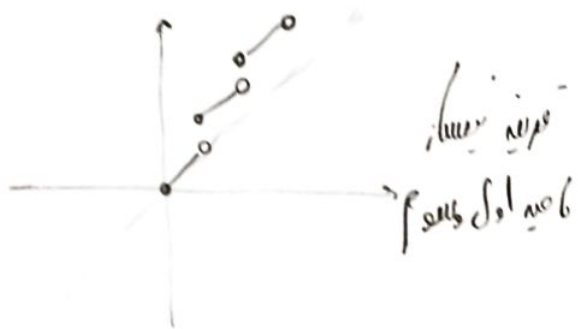


تلف ۱۱

بفرض

۱۳ فرض کنید $f: \mathbb{R} \rightarrow \mathbb{R}$ و $f(x) = x^2 + 1$

۱. الف) $x \in [0, 1]$ را به f اعمال کنید



ب) $f: [-1, 1] \rightarrow [0, 2]$ $f^{-1}(x) = \sqrt{x-1}$ $x \in [0, 2]$ $f^{-1}(0) = -1$ $f^{-1}(2) = 1$

۱- $f(x) = f^{-1}(x)$ $(\sqrt{x-1}, \sqrt{x-1}) = \frac{b}{x} \cdot \frac{x}{f} \rightarrow \frac{x}{f} = \frac{b}{x} \rightarrow x^2 = b \rightarrow x = \sqrt{b}$

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

۲- $\frac{mx+1}{x+m} = x \rightarrow mx+1 = x^2+mx \rightarrow x^2 = 1 \rightarrow x = \pm 1$

۳- $f(x) = |x+1| - |x-1|$ $f^{-1}(x) = x - 1 \rightarrow x = \frac{x+1}{2} \rightarrow x = 1$

۴- $g(x) = \frac{1}{x} \rightarrow f(g(x)) = 1 \rightarrow g(x) = x \rightarrow f(x) = \frac{1}{x} \rightarrow x = 1$

$$f(x) = x + \sqrt{x} \rightarrow x \geq 0 \rightarrow Rf = Df = [0, +\infty) \quad \text{معرکے آلی}$$

معرکے آلی

$$f(x) = (\sqrt{x+1})^2 - 1 = y \rightarrow \sqrt{x+1} = \pm \sqrt{y+1} \rightarrow \sqrt{x} = \pm \sqrt{y+1} - 1 \xrightarrow{x \geq 0} \sqrt{x} \geq 0$$

-9

$$f(x)^{-1} = (\sqrt{x+1} - 1)^2 \quad Df^{-1} = Rf = [0, +\infty)$$

-V معرکے آلی: معرکے آلی

$$y = x - 1 + \sqrt{x}$$

$$f(x) = y \rightarrow f^{-1} \circ f \rightarrow x - 1 + \sqrt{x} = x \rightarrow x = 0$$

$$f(x) = x + \sqrt{x} \xrightarrow{\text{معرکے آلی}} f^{-1}(x) \xrightarrow{\text{معرکے آلی}} \sqrt{f(x)^{-1} - x} \rightarrow f(x)^{-1} - x \geq 0$$

-A

$$f(x)^{-1} \geq x \rightarrow f(x) \leq x \rightarrow x + \sqrt{x} \leq x \rightarrow \sqrt{x} \leq 0 \rightarrow x = 0 \rightarrow x \leq 0 \rightarrow x = 0$$

$$f(x) = x + \sqrt{x+5} \quad Df = [-5, +\infty), Rf = (-\infty, 5] \rightarrow f^{-1}(x) \rightarrow f(x+5)^{-1} \rightarrow g(x)$$

-9

$$f(x+5)^{-1} = x - 5 \rightarrow f(x-5) = x + 5 \rightarrow -(x-5) + \sqrt{x-5+5} = x + 5$$

$$2x+1 = \sqrt{x+1} \rightarrow 4x^2 + 4x + 1 = x + 1 \xrightarrow{x=0} x = -\frac{5}{4} \cdot \checkmark$$

جس کے لیے یہ تابع نسبت $(-\frac{5}{4})$ سے کم ہو جائے گا

$$\sqrt{x} + \sqrt{y} = 2 \rightarrow f(x) = f^{-1}(y) \rightarrow f \circ f(x) = f \circ f^{-1}(y) = y \rightarrow y \in Df^{-1} \rightarrow \sqrt{y} = 2 - \sqrt{x} \quad x, y \geq 0$$

-1

$$2 - \sqrt{x} \geq 0 \quad \sqrt{x} \leq 2 \rightarrow x \leq 4$$

$$(1) \rightarrow 0 \leq x \leq 4$$



یہ حالت ممکنہ ہے