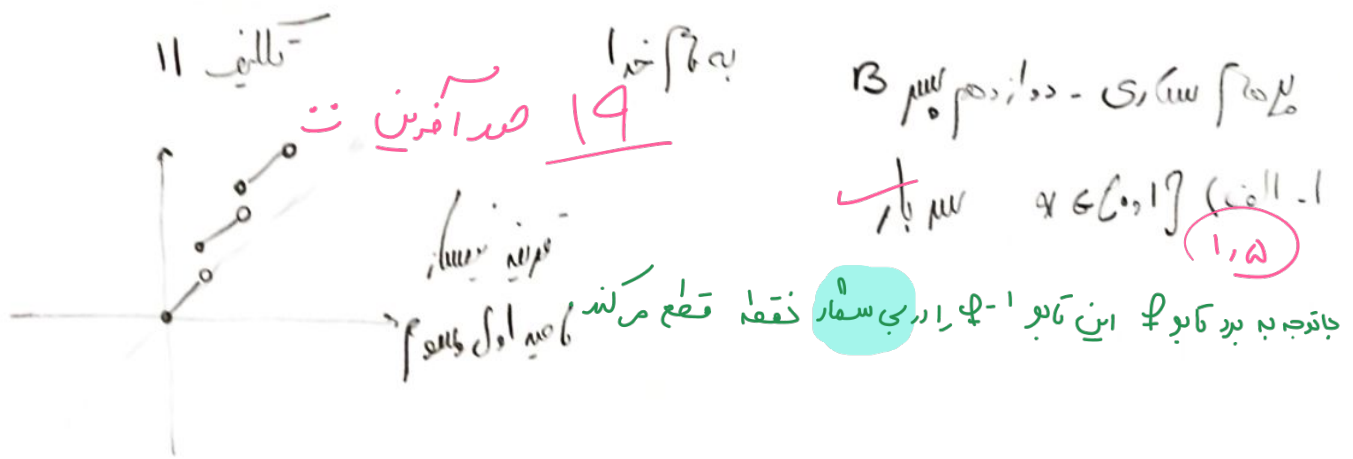




ب) $f: [-1, 1] \rightarrow [0, 1]$ f^{-1} $f(x) = x^2$ $x = \sqrt{y}$ $x = -\sqrt{y}$

۲- $f(x) = f^{-1}(x)$ $(\sqrt{x}, 1)$ $\frac{b}{a} \rightarrow \frac{a}{b} \rightarrow \frac{a}{b} \rightarrow \frac{a}{b} \rightarrow \frac{a}{b}$

$f(x) = f^{-1}(x)$ $\frac{b}{a} \rightarrow \frac{a}{b} \rightarrow \frac{a}{b} \rightarrow \frac{a}{b} \rightarrow \frac{a}{b}$

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

$\frac{1}{x} = 1$

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

۵- $g(x) = \frac{1}{x}$ $f(x) = \frac{1}{x}$ $f^{-1}(x) = \frac{1}{x}$ $g^{-1}(x) = \frac{1}{x}$

$\frac{1}{x} = 1$

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

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

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

۷ - مع دوال: معکوس دوال

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

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

$$f(x) = x^2 + \varepsilon x \xrightarrow{\text{الحد الأدنى}} f^{-1}(x) \xrightarrow{\text{الحد الأدنى}} \sqrt{f(x)^{-1} - x} \rightarrow f(x)^{-1} = x$$

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

$\rightarrow x + \varepsilon x \leq x \rightarrow x(x + \varepsilon) \leq 0 \rightarrow x \leq 0 \quad x(x + \varepsilon)$

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

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

$$2x+1 = \sqrt{x+1} \rightarrow 4x^2 + 4x + 1 = x+1 \rightarrow 4x^2 + 3x = 0 \rightarrow x = 0 \text{ or } x = -\frac{3}{4}$$

چون که در اینجا معکوس نیست $(-\frac{3}{4})$
پس یک جواب داریم

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

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

$$(1, 2) \rightarrow 0 \leq x \leq 4$$



۱ - حالت مشابه