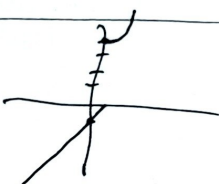


$$\begin{array}{c|c} 1 & 3 \\ -2 & \sqrt{x-1} \\ \hline & 2 \end{array} \quad \text{حداقل} \quad \rightarrow [a, b] = [1, 3]$$

$$y \cdot 2x - 1 \xrightarrow{\text{باز کردن}} x = 2y - 1$$

$$y = \frac{x+1}{2}$$

۱. $\sqrt{x-1}$ 

$$f(x) = x^3 + 1 = y \quad y^3 = x \quad y = \sqrt[3]{x-1}$$

$$x-1 = y$$

$$x = y+1$$

$$y = \frac{x+1}{2}$$

$$f^{-1}(x) = \begin{cases} \sqrt[3]{x-1} & x \geq 1 \\ \frac{x+1}{2} & x \leq 1 \end{cases}$$

3. 6. 6.

$$f^{-1}(x) \rightarrow x = y^3 - \frac{(y+1)^3}{y+1} \quad x \in (y+1) \rightarrow y^3(y+1) - (y+1)^3$$

$$x(y+1) = y^3 - 1 \quad x = \frac{y^3 - 1}{y+1} \rightarrow y = \frac{-1 \pm \sqrt{1-4x}}{2}$$

$$\frac{1(-1 \pm 1)}{1(x+1)} \rightarrow \frac{-1 \pm 1}{1x+1} = \frac{4x+6}{1x+1} \rightarrow \begin{matrix} a = -1 \\ b = -1 \\ d = 4 \end{matrix}$$

$$f^{-1}(6) = \frac{ab+b}{1b+a} \rightarrow \frac{6(4+1)}{16+4} = \frac{10}{5} = 2$$

$$f(x) = \frac{x}{x+1} \quad y = \frac{x}{x+1} \quad y(x+1) = x$$

$$yx + 1 - x = y = 0 \quad x = \frac{1 \pm \sqrt{1-4y}}{2} \xrightarrow{x=y+1} y = \frac{1 \pm \sqrt{1-4x}}{2}$$

1) $x = a \rightarrow a^2 - \varepsilon = 12a - 1 \rightarrow a^2 - 12a + 1 = 0$
 $\xrightarrow{a=2} (a-2)(a^2 + 2a - 1) \rightarrow \underbrace{(a-2)^2}_{+0, \neq 0} (a+2)$
 $a + \varepsilon \geq 0 \rightarrow a \geq -\varepsilon$

2) $f(x) = 3x + 1$ $f^{-1}(x) = \frac{x-1}{3}$ $\varepsilon \rightarrow f(\varepsilon) = 1 \rightarrow f(\varepsilon) = 3\varepsilon + 1$
 $x = 1 \rightarrow f(x) = 3x + 1$
 الف) $\rightarrow 3(1) - 1 = 2$
 ب) $3(3x - 1) - 1 = 9x - 4$

3) $A(M, a) \xrightarrow{\text{تفاضل}} f(x) = \frac{ax}{x-1} \Rightarrow A(a, 1a)$
 $x = a \rightarrow \frac{a(a)}{a-1} = 1a \cdot \frac{a^2}{a-1} = 1a \rightarrow a^2 - 1a = 0$
 $a(a-1) = 0 \rightarrow \begin{cases} a=2 \\ a=0 \end{cases} \xrightarrow{\text{اگر } a=0 \text{ باشد صفر شود و در این حالت}} a=1$

4) الف) $[(1,1), (2,2), (3,3), (4,4)]$
 ب) $[(1,1), (2,2), (3,3), (4,4)]$
 ج) $[(1,1), (2,2), (3,3), (4,4)]$
 د) $[(1,1), (2,2), (3,3), (4,4)]$

5) $f \circ g^{-1} = [(1,1), (2,2), (3,3)]$
 $\frac{h}{f \circ g^{-1}} = [(1, \frac{1}{2}), (2, \frac{1}{3}), (3, \frac{1}{4})]$
 غلط

6) $y = \frac{x+1}{x-2}$ $x=2$ $y=2$ $\rightarrow y = \frac{x+1}{y-2} \rightarrow y = \frac{x+1}{x-2}$
