

$$21^3 - 4 = 1221 - 20 \Rightarrow 21^3 - 1221 + 19 = 0 \rightarrow (x-2)^2 (x+4) = 0$$

$$-4 \leq a \leq \infty$$

$$\Leftrightarrow \frac{-4}{-4} + \frac{4}{4}$$

$$a = [-4, +\infty)$$

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$$f(4) = 3(4) + k = 2 \Rightarrow k = -10 \Rightarrow f(x) = 3x - 10$$

$$\Rightarrow f(7) = 21 - 10 = 11$$

$$f(f(x)) = 3(3x - 10) - 10 = 9x - 30 - 10 = 9x - 40$$

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$$2a = \frac{a^2}{a-1} \Rightarrow 2a^2 - 2a = a^2 \rightarrow a^2 - 2a = 0$$

$$a = 0 \text{ یا } 2$$

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$$f \circ f^{-1} = \{(5, 5), (7, 7), (2, 2), (9, 9)\}$$

$$f^{-1} \circ f = \{(3, 3), (4, 4), (7, 7), (9, 9)\}$$

$$g \circ f^{-1} = \{(2, 5), (5, 7)\}$$

$$g^{-1} \circ f = \{(3, 9), (7, 3), (9, 7)\}$$

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$$\frac{h}{f \circ g^{-1}} = \{(1, \frac{1}{4}), (3, \frac{1}{4})\}$$

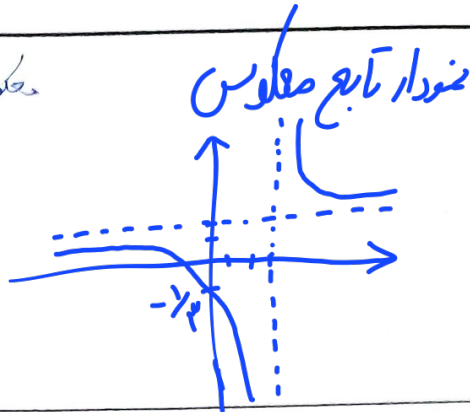
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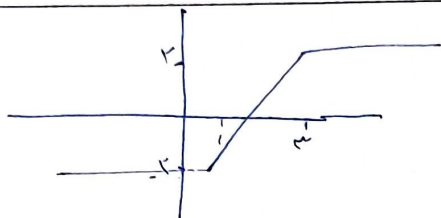
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$$x = \frac{y+1}{y-2} \Rightarrow y = \frac{x+1}{x-2}$$



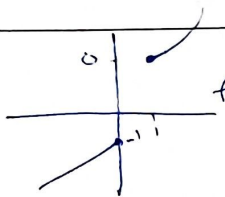
منوار تابع مکوس



$$\Rightarrow [a \ b] = [1 \ 2] \Rightarrow \begin{cases} a=1 \\ b=2 \end{cases}$$

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$$\Rightarrow y = 2x - 5 \rightarrow x = 2y - 5 \rightarrow y = \frac{x+5}{2} \quad -2,1 < x < 2$$



$$f(x) = \begin{cases} x^3 + 5 & x \geq 1 \rightarrow R_f = [5, +\infty) \\ x-1 & x \leq 0 \rightarrow R_f = (-\infty, -1] \end{cases}$$

$$y = x^3 + 5 \rightarrow x = \sqrt[3]{y-5} \Rightarrow f^{-1} = \sqrt[3]{x-5}$$

$$y = x-1 \rightarrow x = y+1 \Rightarrow f^{-1} = x+1$$

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$$\Rightarrow f^{-1}(x) = \begin{cases} \sqrt[3]{x-5} & 5 \leq x < \infty \\ \frac{x+1}{2} & -\infty < x \leq -1 \end{cases}$$

$$x = y^2 - \frac{(y+1)^2}{y+2} = \frac{y^2 + 2y^2 - (y^2 + 1 + 2y + 2y)}{y+2} = \frac{-2y-1}{y+2}$$

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$$\Rightarrow f^{-1} = -\frac{2x+1}{x+2} = \frac{-2x-1}{x+2} \xrightarrow{\frac{ax+b}{cx+d}} a=-2 \Rightarrow b=-1$$

$$a=-2 \ b=-1 \ d=2$$

$$\Rightarrow f^{-1}(b) = f^{-1}(-1) = \frac{-2(-1)-1}{-1+2} = 1 \quad f'(b) = f'(-1) = \frac{1}{2} = 0.5$$

$$x = \frac{y}{y^2+1} \Rightarrow xy^2 - y + x = 0 \xrightarrow{\Delta} x = \frac{1 \pm \sqrt{1-4x^2}}{2x}$$

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میرا است

$$x = \frac{1 + \sqrt{1-4x^2}}{2x}$$

$$|x| \leq \frac{1}{2}$$