

$$a^3 - \epsilon > 12a - 14 \quad a^3 - 12a + 14 > 0$$

$$\begin{array}{r} a^3 - 12a + 14 \quad | a - 2 \\ -a^3 + 2a^2 \\ \hline 2a^2 - 12a + 14 \\ -2a^2 + 4a \\ \hline -8a + 14 \\ 8a - 16 \\ \hline 2 \end{array}$$

$$(a-2)(a^2+2a-7) > 0$$

↓ ↓ ↓
2 -2 -2

- + +

$$(-\infty, 2) \cup (7, \infty) = \{x\}$$

$$f(\epsilon) = 2 \rightarrow f(\epsilon) = 3(\epsilon) + k \rightarrow 2 = 3\epsilon + k \quad k = -10 \quad f(x) = 3x - 10$$

$$f(0) = 3(0) - 10 = -10$$

$$f(4n) = 3(4n) - 10 = 12n - 10 = 2(6n - 5)$$

$$f\left(\frac{ax}{x-1}\right) = x \rightarrow f\left(\frac{ax}{x-1}\right) = a \rightarrow f(a) = \frac{ax}{x-1} \quad \frac{ax}{x-1} = \frac{ax}{x-1} \rightarrow ax - a = 0$$

$$a(ax) = 0 \quad \left\{ \begin{array}{l} 0 \\ 2 \end{array} \right\} \checkmark$$

$f(f(x))$

$3 \rightarrow 5 \rightarrow 3$
 $4 \rightarrow 1 \rightarrow 4$
 $5 \rightarrow 2 \rightarrow 5$
 $6 \rightarrow 4 \rightarrow 6$

$f^{-1}(f(x)) = \{(3,3), (4,4), (5,5), (6,6)\}$

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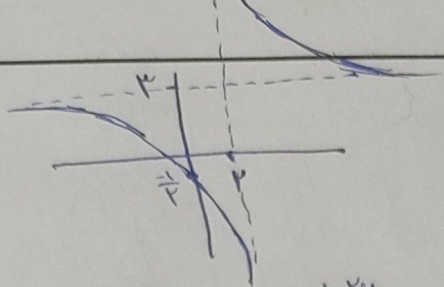
$h = \{(1,2), (2,3), (3,4), (4,5)\}$

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

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

$$x=0 \rightarrow y = -1$$



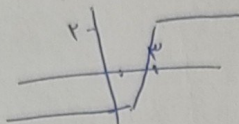
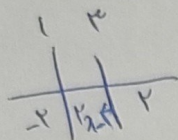
$$y(x-1) = x+1$$

$$x(y-1) = 1+y$$

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

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

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



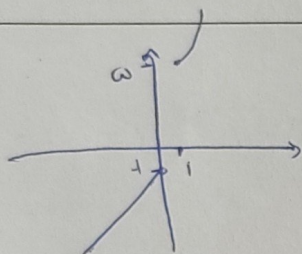
$$[a, b] = [1, 2]$$

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

$$x = y+1$$

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

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



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

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

$$x^2 = y$$

$$x = \sqrt{y}$$

$$x = \sqrt{y}$$

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

$$\ln x = y$$

$$x = e^y + 1$$

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

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

$$f(x) = \frac{x^2(x+1) - (x+1)^2}{x+1} = \frac{x^3 + x^2 - x^2 - 2x - 1}{x+1} = \frac{x^3 - 2x - 1}{x+1}$$

$$y = \frac{x^3 - 2x - 1}{x+1}$$

$$y(x+1) = x^3 - 2x - 1$$

$$x(y+1) = -1-y$$

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

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

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

$$\frac{-1-x}{x+1} = \frac{a(x-b)}{x+d}$$

$$\frac{-1-x}{x+1}$$

$$b = -1$$

$$a = -1$$

$$d = 1$$

$$f^{-1}(b) = f^{-1}(-1) = \frac{-1+1}{-1+1} = \frac{0}{0} = \omega$$

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

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

$$xy + x - y = 0$$

$$y = \frac{1 \pm \sqrt{1-4x}}{2x}$$

$$D = (0, 1)$$

$$f(x) = \frac{1 + \sqrt{1-4x}}{2x}$$