

① نويسن اړديک - ياد هم سي B د هيران

$$12x - 20 \neq x^3 - 4$$

$$x^3 - 12x$$

$$12a - 20 \leq a^2 - 12a + 14 \leq 0 \quad (a \geq -1)$$

$$f(x) = 3x + k \quad \& \quad y = 3x + k$$

$$f^{-1}(x) = x$$

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

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

$$k = -10$$

$$\text{الف) } f(v) = ?$$

$$f(v) = 3 \times v - 10 = 11$$

$$\text{ب) } f(f(x)) = ?$$

$$f(3x - 10) = 3(3x - 10) - 10 = 9x - 100$$

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

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

$$a = \frac{10a}{10a - a} = \frac{10a}{9a} = \frac{10}{9} \quad a = \frac{10}{9}$$

$$yx - y = ax$$

$$x(y - a) = y$$

$$x = \frac{y}{y - a} \Rightarrow y = \frac{x}{x - a}$$

$$f = \{(3,5)(4,6)(7,2)(9,4)\}$$

نوسین اریبی
یا ده سر بی

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$$g = \{(3,2)(1,4)(9,5)\}$$

$$f \circ f^{-1} = \{(5,5)(7,7)(2,2)(4,4)\}$$

$$f^{-1} = \{(5,3)(7,4)(2,6)(4,9)\}$$

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

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

$$g^{-1} = \{(2,3)(4,1)(5,9)\}$$

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

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

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

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

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

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

$$\frac{h}{f \circ g^{-1}} = ?$$

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

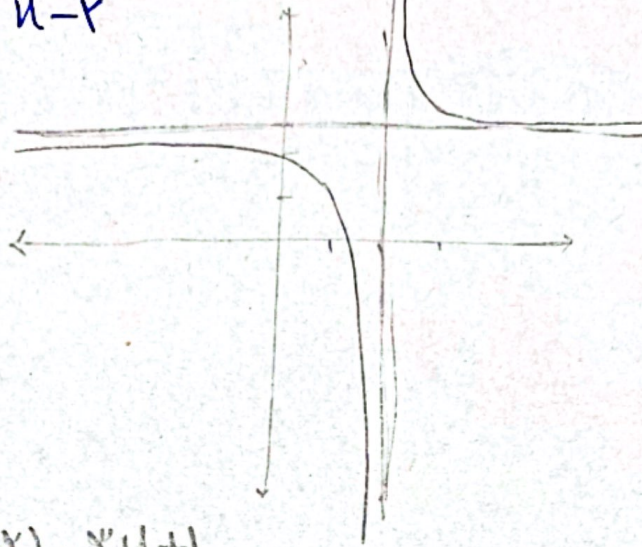
تعریف نه

(ع)

نوشته اریبی
یا، رفسری

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

تابع راسی
مکعبی



مکعب:

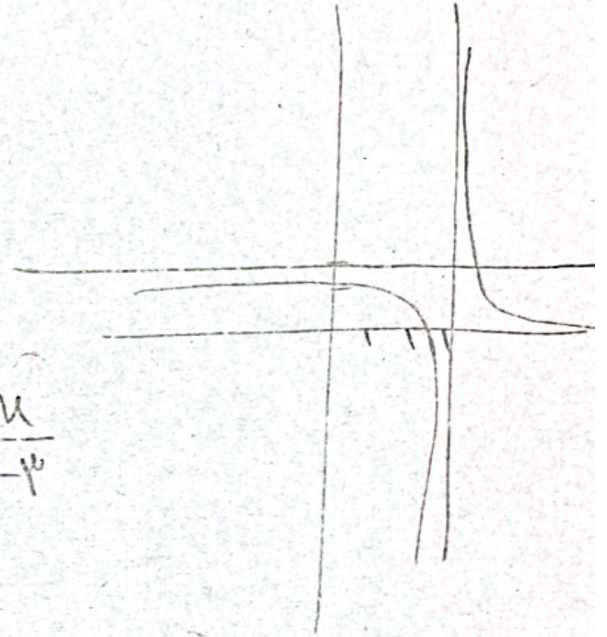
$$y(x-2) = 3x+1$$

$$yx - 2y = 3x+1$$

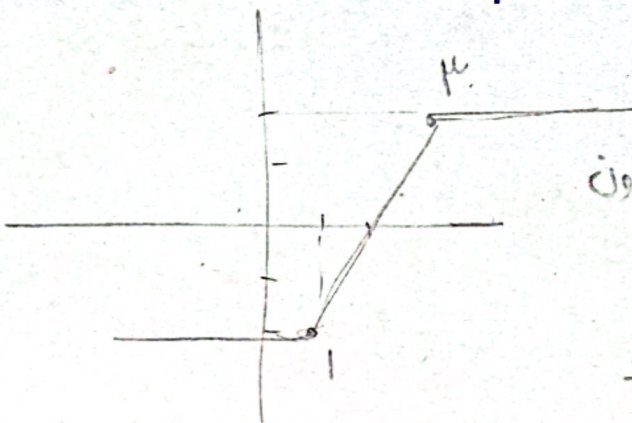
$$yx - 3x = 1+2y$$

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

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



$$f(x) = |x-1| - |x-3|$$



$$\{(1, 2) (2, 0) (3, 2)\}$$

$$\text{نواحی: } \{(-1, 1) (0, 2) (2, 3)\}$$

$$[1, 3] \text{ باز است}$$

$$f(x) = 2(x-2)$$

$$y = x - 2$$

$$2x = y + 2$$

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

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

$$f(u) = \begin{cases} u^3 + u = y & u \geq 1 \\ u^3 - 1 = y & u < 1 \end{cases}$$

① نوشتن اریبی
یا هم سری بی

$$\{(1,0), (2,1), \dots\}$$

$$\{-1, (-2, -1), (-3, -2), \dots\}$$

یک به یک است

$$y = u^3 + u$$

$$u^3 = y - u$$

$$u = \sqrt[3]{y - u}$$

$$y = \sqrt[3]{y - u}$$

$$y = u^3 - 1$$

$$y + 1 = u^3$$

$$u = \sqrt[3]{y + 1}$$

$$y = \frac{u^3 + 1}{u}$$

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

②

$$\Rightarrow y = \frac{-3u - 1}{u + 3}$$

$$y(u + 3) = -3u - 1$$

$$yu + 3y = -3u - 1$$

$$u(y + 3) = -1 - 3y$$

$$u = \frac{-1 - 3y}{y + 3}$$

$$y = \frac{-1 - 3u}{u + 3}$$

$$f^{-1}(b) = b = \frac{3u + 1}{-u - 3} \quad (u = \delta)$$

$$a = -3 \quad b = -1 \quad d = 3$$

⑤ نوشتن اربیبی
یازدهم سری B

$$f(u) = \frac{u}{u^2 + 1}$$

$$a = y$$

$$b = -1$$

$$c = y$$

$$y u^2 + y = u$$

$$\leftarrow y u^2 - u + y = 0$$

$$u = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{1 \pm \sqrt{1 - 4y^2}}{2y}$$

$$f^{-1}(y) = \frac{1 \pm \sqrt{1 - 4y^2}}{2y}$$

$$u \neq 0$$

$$y \neq 0$$