

$$(a-2)^3 + 9a^2 + 24a - 20$$

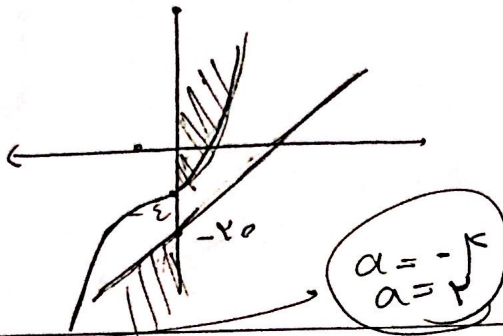
$$9(a^2 + 2a - 2)$$

نام و نام خانوادگی (یا آیدین) پاسخنامه تشریحی تکلیف شماره کلاس

$$f(x) = \begin{cases} x^3 - 2 & : x > a \\ 12x - 20 & : x \leq a \end{cases}$$

$$\checkmark \quad 12x - 20$$

$$a^3 - 2 = 12a - 20 \quad \rightarrow \quad a^3 - 12a + 18 = 0$$



1

$$f(x) = 3x + k \rightarrow 12 + k = 2 \rightarrow k = -10$$

$$f^{-1}(2) = 2 \rightarrow f(2) = 2$$

$$f(2) = 2 - 10 = -8$$

$$f(f(x)) =$$

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

$$9x - 30$$

2

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

$$f \circ g^{-1} = \{(3, 5), (4, 7)\}$$

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

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

$$f \circ f^{-1} = \emptyset$$

$$f^{-1} \circ f = \emptyset$$

3

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

$$A(2a, a) \rightarrow f^{-1}(x) \rightarrow f^{-1}(2a) = a$$

$$f(x) = \frac{ax}{x-1} \rightarrow \frac{a^2}{a-1} = 2a \rightarrow a^2 = 2a^2 - 2a \rightarrow -a^2 + 2a = 0 \rightarrow a(a-2) = 0$$

$$a=0 \quad a=2$$

$$f = \{(2, 4), (3, 8), (4, 0)\} \quad \rightarrow \quad f \circ g^{-1} = \{(2, 4), (3, 8), (4, 0)\}$$

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

$$\rightarrow \{(2, \frac{1}{2}), (3, \frac{1}{3})\}$$

$$h = \{(1, 2), (3, 4), (5, 1), (6, 0)\}$$

4

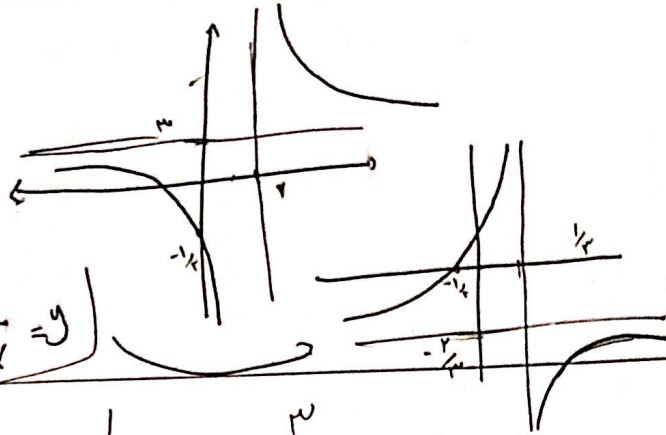
5

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

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

$$xy - px = py + 1$$

$$\rightarrow -px - 1 = y(p-x) \rightarrow \frac{-px-1}{p-x} = y$$

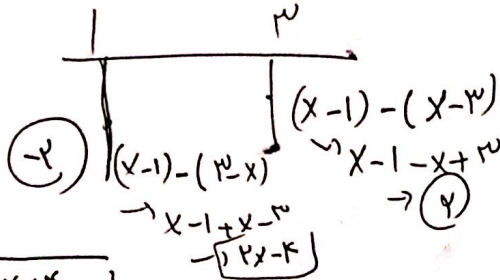


$$f(x) = |x-1| - |x-3|$$

↳ [a,b]

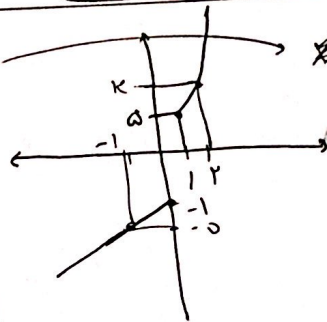
میانگین

$$\rightarrow y = px - 1 \rightarrow x = \frac{y+1}{p} \rightarrow \frac{x+p}{p} = y$$



$$f(x) = \begin{cases} x^p + p & x \geq 1 \\ px - 1 & x \leq 0 \end{cases}$$

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



$$x = y^p + p$$

$$y = px - 1 \rightarrow x = \frac{y+1}{p} \rightarrow \frac{x+p}{p} = y$$

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

$$f^{-1}(x) = y = \frac{-px-1}{x+p} \rightarrow x = \frac{-py-1}{y+p}$$

$$f^{-1}(x) = \frac{ax+b}{cx+d} \rightarrow f^{-1} = \frac{-4x-2}{2x+4}$$

$$f^{-1}(b) = \frac{px+1}{x-p} \rightarrow x+p = -py-1 \rightarrow x+y = -\frac{p+1}{p}$$

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

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

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

$$f(x) = \frac{x}{x^p+1} \rightarrow x = \frac{y}{y^p+1} \rightarrow y(y^p+1) = x \rightarrow y^{p+1} + y = x$$

$$x = y(x^p+1)$$

$$x = yx^p + y$$

$$x^p + x = y \rightarrow x^p + x - y = 0$$

$$x = yx^p + y \rightarrow x^p + x - y = 0 \rightarrow \frac{\pm \sqrt[p]{x^p-1} + 1}{p} = y$$