

$$f(x) = \begin{cases} x^2 - F & : x > a \\ 12x - 10 & : x \leq a \end{cases} \rightarrow x^2 - F > 12x - 10 \rightarrow x^2 - 12x + 14 > 0$$

$$\rightarrow (x-7)^2(x+7) > 0 \rightarrow \frac{-F}{-1+1} + \frac{14}{0} \rightarrow -F \leq a$$

اینجا بریم زارو - بار هم (ضرب سه شنبه - لطیف ۱۱

سوال ۵

$$f(x) = 12x + k = 12x - 10$$

$$f(v) = 12(v) - 10 = 11$$

سوال ۵

$$f^{-1}(r) = F \rightarrow 12(F) + k = r \rightarrow k = -10$$

$$b) f(f(x)) = 12(12x - 10) - 10 = 9x - 130 - 10 = 9x - F_0$$

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

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

$$\begin{cases} a=0 & \text{ممنوع} \rightarrow \frac{x}{x-0} = \frac{x}{x} \quad x \neq 0 \\ a=1 & \checkmark \end{cases}$$

$$A(1a, a)$$

$$f(x) = f(r, v)(r, v)(v, r)(9, 4)$$

$$f^{-1}(x) = f(\omega, r)(v, r)(r, v)(4, 9)$$

سوال ۵

$$g(x) = f(r, r)(1, 4)(9, 0)$$

$$g^{-1}(x) = f(r, r)(4, 1)(0, 9)$$

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$$a) f \circ f^{-1} = f(\omega, v)(v, v)(r, r)(4, 4)$$

$$b) f^{-1} \circ f = f(r, r)(r, r)(v, v)(9, 9)$$

$$c) f \circ g^{-1} = f(r, \omega)(\omega, 4)$$

$$d) g^{-1} \circ f = f(r, 9)$$

$$f(x) = f(r, F)(F, 1)(9, 0)$$

$$f \circ g^{-1} = f(\omega, r)(r, 1)(1, F)$$

$$\rightarrow \frac{h}{f \circ g^{-1}} = f(\omega, \frac{1}{F})(r, \frac{F}{1})(1, \frac{F}{F})$$

سوال ۵

$$g(x) = f(r, 1)(r, r)(4, 0)$$

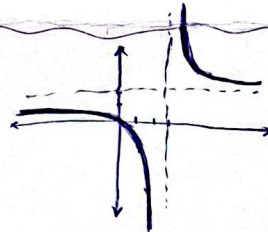
$$h(x) = f(1, r)(r, F)(F, 1)(\omega, 1)$$

$$\rightarrow f(r, \frac{1}{F})(1, \frac{F}{F})$$

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$$f(x) = \frac{x+1}{x-2} \quad \text{مقدار منبسط}$$

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



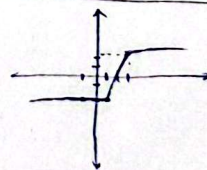
۱, ۱, ۵

سوال ۵

$$f(x) = |x-1| - |x-3| \rightarrow \text{مقدار منبسط}$$

$$[a, b] \rightarrow \text{مقدار منبسط}$$

$$\begin{cases} x > 3 \\ 1 \leq x \leq 3 \\ x \leq 1 \end{cases}$$



$$[a, b] = [1, 3]$$

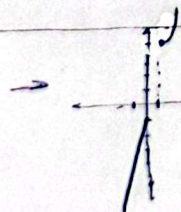
سوال ۵

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$$f(x) = 12x - F$$

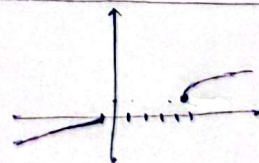
$$x = 12y - F \rightarrow y = \frac{x+F}{12} \rightarrow f^{-1}(x) = \frac{x+F}{12} : 1 \leq x \leq 3$$

$$f(x) = \begin{cases} x^2 + F & : x > 0 \\ x^2 - 1 & : x \leq 0 \end{cases}$$



مقدار منبسط

مقدار



سوال ۵

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

$$x = y^2 + F \rightarrow y = \sqrt{x-F} : x \geq 0$$

$$x = y^2 - 1 \rightarrow y = \sqrt{x+1} : x \leq -1$$

$$f(x) = x^r - \frac{(x+1)^r}{x+r} = \frac{x^{r+1} + r x^r - x^r - 1 - r x - x^{r+1}}{x+r} = \frac{-r x - 1}{x+r} \quad \text{چون } x = \frac{-r y - 1}{y+r} \rightarrow y = \frac{-r x - 1}{x+r}$$

مسئله ۱۰۱  
(۱)

$$f'(x) = \frac{ax+b}{x+d} = \frac{-4x-2}{x+4} \quad \sim \quad b=-2 \quad f'(-1) = \frac{-4(-1)-2}{-1+4} = \frac{10}{3} = \boxed{5}$$

(۵)

$$f(x) = \frac{x}{x^2+1} \quad \text{چون } \frac{y}{y^2+1} = x \rightarrow y = x y^2 + x \rightarrow x y^2 - y + x = 0 \quad y = \frac{1 + \sqrt{1-4x^2}}{2x}$$

مسئله ۱  
(۵)

چون  $x$  و  $y$  هم علامت دارند  
پس  $x$  و  $y$  با هم مثبت  
است