

۱۹,۷۵

پاسخنامه تشریحی تکلیف شماره ۱۱... کلاس... یازدهم... سر B

نام و نام خانوادگی: حسن جباری

$$12a - 20 + 12a^3 - 4$$

$$a^3 - 12a + 14 \geq 0$$

$$a^3 - 12a + 14 = (a + 2)(a - 2)^2$$

$$\begin{array}{c|c|c|c} - & 2 & + & 2 \\ \hline - & 2 & + & 2 \end{array}$$

$$\Rightarrow a \geq -2$$

* نباید یکدیگر را جمع کرد

$$a^3 - 4, 12a - 20$$

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

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

$$k = -10$$

$$f(v) =$$

$$3(v) - 10 = 11$$

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

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

$$3(3x - 10) - 10 =$$

$$9x - 30 - 10 =$$

$$9x - 40$$

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$$f(x) = \frac{ax}{x-1} \Rightarrow f^{-1}(x) = y = \frac{ax}{y-1} = xy - x = ay \Rightarrow xy - ay = x$$

$$y(x-a) = x \Rightarrow y = \frac{x}{x-a} \xrightarrow{(x,a)} a = \frac{xa}{xa-a} \Rightarrow a = \frac{xa}{a} = x$$

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$$الف) f(f^{-1}(x)) = \{(v,v), (2,2), (5,5), (9,9)\}$$

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

$$ج) f(g^{-1}(x)) = \{(2,5), (5,6)\}$$

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

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$$f(g^{-1}(x)) = \{(1,4), (3,1), (5,0)\}$$

$$\frac{h}{f \circ g^{-1}}, \left\{ \frac{2}{4}, \frac{4}{1} \right\} = \left\{ \frac{1}{2} \right\}$$

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$$\left(\frac{h}{f \circ g^{-1}} \right)^A \rightarrow D_A = D_h \cap D_{f \circ g^{-1}} \mid D_{f \circ g^{-1}} \neq \emptyset \Rightarrow \{1, 3, 4, 5\} \cap \{1, 3\} = \{1, 3\}$$

$y = \frac{3x+1}{x-2}$ تایید یک به یک است	$\text{وارد} \rightarrow x = \frac{3y+1}{y-2} = 3y - 2x = 3y+1$ $3y - 3y = 1 + 2x = y(x-3) = 1 + 2x$ $y = \frac{3x+1}{x-3}$
$f(x) = x-1 - x-3 $ $\begin{array}{c c c} 1 & 3 & \\ \hline -x+1+x-3 & x-1+x-3 & x+1-x+3 \\ \hline -2 & 2x-4 & 4 \end{array}$ $f(x) = \begin{cases} x \geq 2 & x \\ 1 \leq x < 2 & 2x-4 \\ x < 1 & -2 \end{cases}$	وارد و خارج $[a, b] = [1, 3]$ $g^{-1}(x) = y = \frac{x+4}{2} ; x \in [-4, 2]$ $g(x) = 2x-4 \rightarrow f^{-1}(x) = x = 2y-4 \Rightarrow 2y = x+4$
$f(x) = \begin{cases} x^2+4 & ; x \geq 1 \text{ I} \\ 2x-1 & ; x < 1 \text{ II} \end{cases}$ $\rightarrow R = [4, +\infty) = D_I$ $R_{II} = (-\infty, -1] = D_{II}$ تایید و وارد	$f^{-1}(x) = \begin{cases} \sqrt{x-4} & ; x \in [4, +\infty) \\ \frac{x+1}{2} & ; x \in (-\infty, -1] \end{cases}$
$f(x) = x^2 - \frac{(x+1)^3}{x+3}$ $f^{-1}(x) = \frac{ax+b}{cx+d}$ $f^{-1}(-2) = \frac{1 \cdot (-2) - 2}{1 \cdot (-2) + 4} = -1$	$0 \rightarrow -\frac{1}{3} \quad 1 \rightarrow -1 \quad 2 \rightarrow -\frac{1}{3}$ $0 \leftarrow -\frac{1}{3} \quad 1 \leftarrow -1 \quad 2 \leftarrow -\frac{1}{3}$ $\frac{-a}{c} + b = 0 \rightarrow a = 3b$ $-a + b = -2 \cdot d \rightarrow -3b + b = -2d \rightarrow -2b = -2d \rightarrow b = d$ $-2b - d = -2 \rightarrow -2b - b = -2 \rightarrow -3b = -2 \rightarrow b = \frac{2}{3}$ $b = -2 \quad a = -6$ $d = +2$
$f(x) = \frac{x}{x^2+1}$ $\text{وارد} \rightarrow x = \frac{y}{y^2+1} = y^2y + y = y \Rightarrow xy^2 - y + x = 0$ $y = \frac{1 \pm \sqrt{1-4x^2}}{2x}$	$y = \frac{1 \pm \sqrt{1-4x^2}}{2x} ; x \in [-\frac{1}{2}, 0) \cup (0, \frac{1}{2}]$ $x=0 \Rightarrow f^{-1}(0) = 0$ $\sqrt{1-4x^2} \geq 0 \Rightarrow 1-4x^2 \geq 0 \Rightarrow x^2 \leq \frac{1}{4} \Rightarrow -\frac{1}{2} \leq x \leq \frac{1}{2}$