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نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره: کلاس: تاریخ:

$x^3 - 4$ $x > a \rightarrow (a, +\infty)$
 $12x - 20$ $x \leq a \rightarrow (-\infty, a]$
 $a \xrightarrow{2} (4, +\infty) \xrightarrow{2} (-\infty, 4)$

$a^3 - 4 \geq 12a - 20$
 $a = 2$ $a \in [4, +\infty)$

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$y = 3x + k \rightarrow 3x = y - k \quad x = \frac{y - k}{3} \quad y = \frac{x - k}{3} \rightarrow f^{-1}(y) = \frac{x - k}{3}$
 $\frac{y - k}{3} = 4 \quad y - k = 12 \quad [k = -10]$
 الف) $f(7) = 3(7) - 10 = 11$
 ب) $f(f(x)) = 3(3x - 10) - 10 = 9x - 40$

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$y = \frac{ax}{x-1} \rightarrow yx - y = ax \quad x(y-a) = y \quad x = \frac{y}{y-a} \quad y = \frac{x}{x-a}$
 $\frac{a^2}{a-1} = 2a \rightarrow a(a-2) = 0$
 $a = 2 \checkmark$
 $a = 0 \checkmark$

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$f^{-1}: \{(\omega, 3)(\nu, 4)(\rho, 7)(\epsilon, 9)\} \quad g^{-1}: \{(2, 3)(\epsilon, 8)(\omega, 9)\}$
 الف) $f \circ f^{-1}: \{(\omega, \omega)(\nu, \nu)(\rho, \rho)(\epsilon, \epsilon)\}$ ج) $f \circ g^{-1}: \{(2, \omega)(\omega, \epsilon)\}$
 ب) $f^{-1} \circ f: \{(3, 3)(4, 4)(7, 7)(9, 9)\}$ د) $g^{-1} \circ f: \{(3, 9)(7, 3)(9, 8)\}$

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$g^{-1}: \{(1, 2)(3, 4)(\omega, 6)\}$
 $f \circ g^{-1}: \{(1, 4)(3, 8)(\omega, 0)\}$
 $\frac{h}{f \circ g^{-1}} = \{(1, \frac{1}{4})(3, \frac{1}{8})(\omega, \frac{1}{0})\}$

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$$f^{-1}(u) = \frac{r_{2n+1}}{n-r}$$

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

$$f^{-1}(x) = \frac{x+\xi}{2} \quad x \in [-2, 2]$$

$$x \leq 1 \quad f(x) = -2$$

$$1 \leq x \leq 3 \quad f(x) = 2x-4 \quad [-2, 2] \rightarrow \text{غير ثابت}$$

$$x \geq 3 \quad f(x) = 2$$

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$$x^3 + \xi \xrightarrow{(1)} \omega \Rightarrow [\omega, +\infty)$$

میشود

$$\xi x - 1 \xrightarrow{(2)} -1 \Rightarrow (-\infty, -1]$$

$$y = x^3 + \xi \rightarrow y = \sqrt[3]{x+\xi}$$

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

$$f(x) = \begin{cases} \sqrt[3]{x-\xi} & x \geq \omega \\ \frac{x+1}{\xi} & x \leq -1 \end{cases}$$

$$x \geq \omega$$

$$x \leq -1$$

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$$y = \frac{\cancel{2x^3} + \cancel{4x^2} - \cancel{2x^3} - \cancel{4x^2} - 3x - 1}{x+3} \rightarrow y = \frac{-3x-1}{x+3}$$

$$b = (-1) \quad y = \frac{-3(-1)-1}{-1+3} \rightarrow \frac{2}{2} = 1$$

$$f^{-1}(u) = \frac{-4u-2}{r_{2n+1}} = \frac{au+b}{r_{2n+d}}$$

$$f^{-1}(b) = a$$

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

$$|u| \leq \frac{1}{4}$$

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