

$$f(m) = \begin{cases} m^2 - 4 & ; m > 4 \\ 12m - 20 & ; m \leq 4 \end{cases}$$

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

①

$$a^3 - 12a + 14 > 0 \rightarrow (a^3 + 12a - 4a^2 - 14) - 12a + 14 + 4a^2 = 0$$

$$(a-2)^2 + 4(a^2 - 4a + 4) = (a-2)^2 + 4(a-2)^2$$

$$(a-2)^2 (a-2+4) = (a-2)^2 (a+2) \rightarrow a-2$$

از آنجا که $a \geq 4$ است پس $a-2 > 0$

②

$$f(m) = 12m + k \quad f^{-1}(x) = 4 \rightarrow f(4) = x$$

$$\text{الف) } f(4) = 12(4) - 10 = 38$$

$$12 + k = 2 \quad k = -10$$

$$f(m) = 12m - 10$$

$$\text{ب) } f(f(m)) = f(12m - 10) = 12(12m - 10) - 10 = 144m - 130$$

$$f(m) = \frac{am}{m-1}$$

$$A \mid \frac{ra}{a} \rightarrow \mid a$$

③

$$f(m) = \frac{a^2}{a-1} = ra$$

$$ra^2 - ra = ar$$

$$a^2 - ra = 0 \quad a(a-r) = 0 \quad a=0 \quad a=r$$

$$g = \{(3,2), (1,4), (9,0)\} \quad f = \{(3,0), (4,7), (7,2), (9,4)\}$$

④

$$g^{-1} = \{(2,3), (4,1), (0,9)\} \quad f^{-1} = \{(0,3), (7,4), (2,7), (4,9)\}$$

$$\text{الف) } f \circ f^{-1} \Rightarrow \{(0,0), (7,7), (4,4), (2,2)\}$$

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

$$\text{ج) } f \circ g^{-1} \Rightarrow \{(2,0), (0,4)\}$$

$$\text{د) } g^{-1} \circ f \Rightarrow \{(3,9), (7,3), (9,1)\}$$

(5)

$$f = \{(1, 4), (2, 1), (3, 0)\} \quad g = \{(1, 1), (2, 3), (3, 0)\}$$

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

$$f \circ g^{-1} \Rightarrow \{(1, \frac{1}{4}), (2, \frac{1}{1}), (3, \frac{1}{0})\} \Rightarrow \{(1, \frac{1}{4}), (2, 1)\}$$

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

غرض

(4)

$$f = \frac{m+1}{m-2}$$

$$\frac{am+b}{cm+d}$$

$$\Rightarrow ad \neq bc \Rightarrow -4 \neq 1$$

تابع هینوئرانست
و یک به یک است.

$$f^{-1} \Rightarrow y = \frac{m+1}{m-2}$$

$$ad - bc = -4 - 1 = -5$$

نقطه

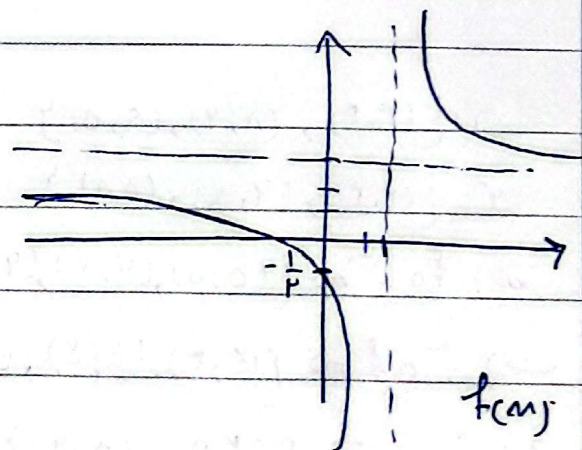
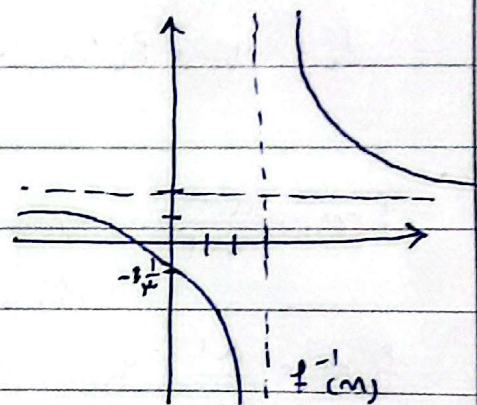
$$m-2=0$$

$$\frac{a}{c} = 2$$

$$\text{if } m=0 \Rightarrow y = -\frac{1}{2}$$

محاسبه

محاسبه



(۷) $f(m) = |m-1| - |m-3|$ بازه $(a, b]$ را در نظر بگیرید. این بازه حد است.
 باید ضابطه تابع معکوس در این بازه ؟

$$\begin{array}{c} \begin{array}{ccc} 1 & & 3 \\ \hline -m+1 & m+(-3) & |m-1+m+3| \\ -2 & m-2 & m-1-m+3 \\ & & 2 \end{array} \\ \left. \begin{array}{l} y = m-2 \quad m \geq y+2 \quad m \leq \frac{y+2}{2} \\ y = \frac{m}{2} + 2 \end{array} \right\} \begin{array}{l} 2, m > 3 \\ m-2, 1 \leq m \leq 3 \\ -2, m < 1 \end{array} \\ \left. \begin{array}{l} a=1 \\ b=3 \end{array} \right\} y = m-2 \end{array}$$

(۹) سوال ۲ $f(m) = m^2 \frac{(m+1)^2}{m+2} \rightarrow f^{-1}(m) = \frac{am+b}{cm+d}$

(b < 0) (حل) $f^{-1}(b)$ $m^2 (m^2 + 3m^2 + 3m + 1)$

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

$f^{-1}(-2) = \frac{-2^2 - 1}{-2 - 2} = \frac{-5}{-4} = \frac{5}{4}$ $y = \frac{m^2 - 1}{m + 2} \sim y = \frac{-4m - 2}{m + 2}$ $a = -4$ $b = -2$ $d = 4$

(۹) سوال ۲ $f(m) = \begin{cases} m^2 + 2, m \geq 1 \rightarrow R_+ [0, +\infty) \\ m - 1, m \leq 0 \rightarrow R_+ (-\infty, -1] \end{cases}$
 بارون ۲ ✓

$y = m^2 + 2 \quad y - 2 = m^2 \quad m = \sqrt{y - 2}$ $y = \sqrt{m - 2}, m \geq 1$
 $y = m - 1 \quad m = y + 1 \quad m = \frac{y + 1}{2}$ $y = \frac{m + 1}{2}, m \leq -1$

• Date: / /

• Subject:

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

$$\Delta = 1 - \epsilon m^2$$

$$f^{-1}(m) = \frac{1 \pm \sqrt{1 - \epsilon m^2}}{\epsilon m}$$

$$y = \frac{1 \pm \sqrt{1 - \epsilon m^2}}{\epsilon m}$$

جواب منقول
جواب منقول

$$D f^{-1}(m) = \left[-\frac{1}{\epsilon}, \frac{1}{\epsilon} \right] - \{0\}$$

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