

$a^3 - 4 \geq 12a - 4 \Rightarrow a^3 - 12a + 4 > 0 \Rightarrow$
 $-1 + 4 \Rightarrow a > -1 \checkmark$

2

1

$n_{x-1} = y_x, m_x = y_{x-1} \Rightarrow m_x = 4 \Rightarrow y_x = 12 \Rightarrow f(x) = 12 + k$
 $\Rightarrow k = -10 \checkmark$
 $f(17) = 3(17) - 10 = 11 \checkmark$
 $f(f(m)) = 9m + 4k = 9m - 4 \checkmark$

2

2

~~.....~~
 $n_{x-1} = y_x, m_x = y_{x-1} \Rightarrow f(a) = \frac{a^2}{a-1} = 2a$
 $\Rightarrow 2a^2 - 2a = a^2 \Rightarrow a^2 - 2a = 0 \Rightarrow a = 0 \rightarrow$ **ذوق**
 $a = 0 \rightarrow f(a) = 0$ تابع ثابت صفر واراد پذیرد

1, 1/2

3

$f^{-1} \circ f = \{(1, 1), (2, 2), (3, 3), (4, 4)\} \checkmark$
 $f \circ g^{-1} = \{(3, 9), (7, 3), (9, 1)\} \checkmark$
 $g^{-1} \circ f = \{(2, 5), (5, 4)\} \checkmark$

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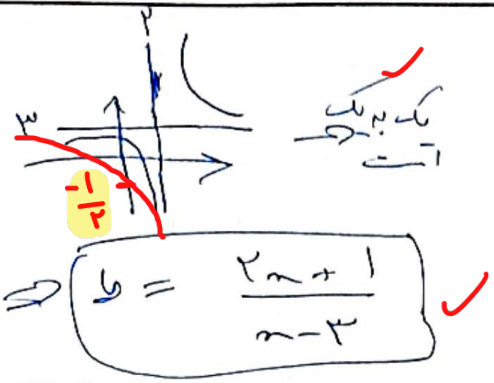
~~.....~~
 $\Rightarrow \frac{h}{f \circ g^{-1}} = \dots$
 $D_{f \circ g^{-1}} = \{1, 3, 9\}$
 $D_h = \{5, 3, 1\}$
 $D_{f \circ g^{-1}} \cap D_h = \{1, 3, 9\}$
 $f \circ g^{-1} \circ h = \{(1, 4), (3, 1), (9, 0)\}$

0

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$\frac{h}{f \circ g^{-1}} = \{(1, \frac{1}{9}), (3, \frac{1}{9})\}$

محل برخورد با محورهای مختصات



$$x = \frac{3y+1}{y-2} \Rightarrow y = \frac{3x+1}{x-2}$$

$$b = \frac{3x+1}{x-2}$$

سوال خود را تابع معکوس هم بنویس!

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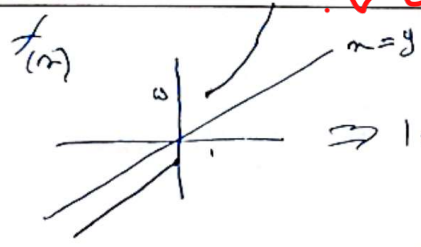
$$f(x) = \begin{cases} x & x > 3 \\ 2x-2 & 1 < x < 3 \\ -2 & \end{cases}$$

$$y = 2x-2 \Rightarrow x = \frac{y+2}{2}$$

$$-2 \leq x \leq 2$$

همیشه وقت معکوس تابع را بدست مری باید دامنه اش را مشخص کنی!

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$$1 + y_1 = y_2 \Rightarrow x_1 = x_2$$

$$f^{-1}(x) = \begin{cases} \sqrt{x-1} & ; x \geq 1 \\ \frac{x+1}{4} & ; x \leq 1 \end{cases}$$

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$$a^x - \frac{(x+1)^x}{x+2} = \frac{x^2 + 2x^2 - x^2 - 2x^2 - 2x - 1}{x+2} = \frac{-x-1}{x+2}$$

$$x = \frac{-x-1}{y+2} \Rightarrow y = \frac{-x-1}{x+2} \Rightarrow b = -2$$

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

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

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$$y(x^2+1) = x \Rightarrow yx^2 - x + y = 0$$

$$x = \frac{1 \pm \sqrt{1-4y^2}}{2y} \Rightarrow y = \frac{1 \pm \sqrt{1-4x^2}}{2x}$$

$$|x| < \frac{1}{2} - \{0\}$$

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