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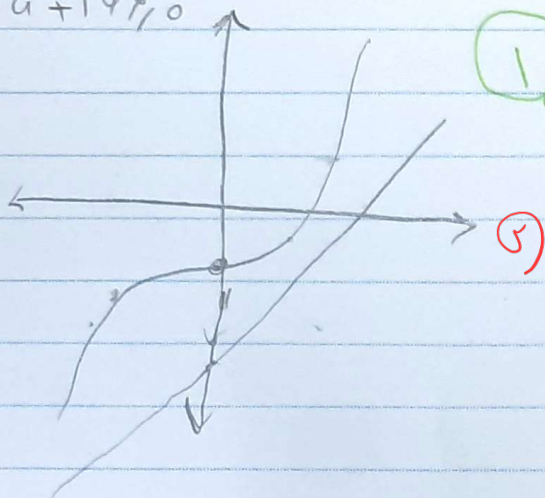
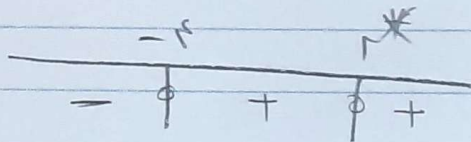
مستأش عزمي زاده

1

$$12a - 20 \leq a^2 - 4 \Rightarrow a^2 - 12a + 14 \geq 0$$

$$(a+4)(a-2)^2 \geq 0$$

2



3

$$[-4, +\infty)$$

4

5

$$f(17) = 21 - 10 = 11$$

$$f(x) = 2$$

$$12 + x = 2 \Rightarrow x = -10$$

$$f(f(x)) = 2(3x - 10) - 10 = 6x - 30$$

6

$$f^{-1}(x) : \frac{ay + a}{y - 1} = x \Rightarrow y = -\frac{-x - a}{x - a}$$

7

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

$$a \neq 0$$

8

$$f = \{(0,0), (1,1), (2,2), (3,3), (4,4), (5,5), (6,6), (7,7), (8,8), (9,9)\}$$

9

$$f = \{(2,0), (0,4), (3,9), (1,3), (9,8)\}$$

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

$$g = \{(3,2), (1,4), (9,8)\} \quad g^{-1} = \{(2,3), (4,1), (8,9)\}$$

$$g^{-1} = \{(1,2), (3,4), (5,6)\}$$

(5)

$$\text{Log } g^{-1} = \{(1,4), (3,8), (5,16)\}$$

"مخرج غنق"

(5)

$$\left(1, \frac{2}{3}\right) \left(3, \frac{4}{3}\right)$$

2

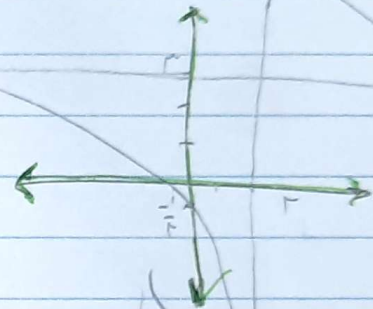
3

دکوس بدیر است. بدیر بدیر است

(4)

4

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



5

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



6

7

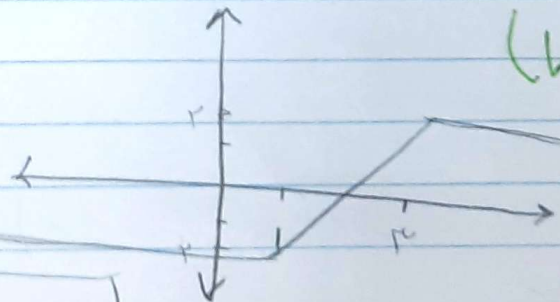
$$[a, b] \rightsquigarrow [1, 3]$$

(4)

8

$$x-1 + x-3 = 2x-4$$

"ضابطه ی خود تابع"

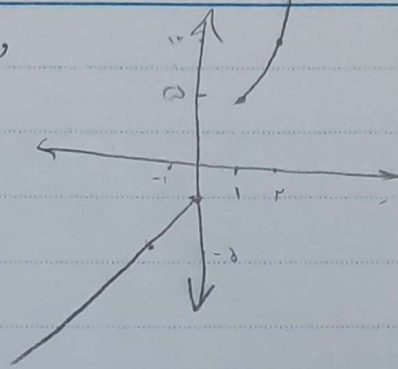


9

$$x = 2y - 4 \Rightarrow y = \frac{1}{2}x + 2$$

(5)

دارون پذیر است چون یک به یک است



$$y^2 + 4 = x$$

$$y = \sqrt{x-4} \quad x \geq 4$$

$$y = \frac{1}{2}x + \frac{1}{2} \quad x \leq -1$$

$$4y - 1 = x$$

من دانستم $R_f = D_f - 1$

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

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

$$y = \left(\frac{-2x-1}{x+2} \right) \times \frac{x}{2} \Rightarrow a = -4, b = -2, d = 4$$

$$f^{-1}(-2) \Rightarrow \frac{2x+1}{x+2} = -2 \Rightarrow 2x+1 = -2x-4 \Rightarrow x = -5$$

(در این مثال ضابطه‌ی $f(x)$ و $f^{-1}(x)$ یکی است پس تقابلی ندارد در کنار هم قرار می‌دهیم)

$$y = \frac{x}{x^2+1} \xrightarrow[\text{ع.ت.}]{\text{دارون}} x = \frac{y}{y^2+1} \Rightarrow xy^2 + x - y = 0$$

برای تعریف Δ با سطر $1-4x^2 \geq 0$

$$4x^2 \leq 1 \Rightarrow -\frac{1}{2} \leq x \leq \frac{1}{2}$$

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

$$f^{-1}(x) = \frac{1 \pm \sqrt{1-4x^2}}{2x} \quad \left[-\frac{1}{2}, \frac{1}{2}\right]$$

Arman