

دارد هم رفتن A

$$f(x) = x + \sqrt{x-2}$$

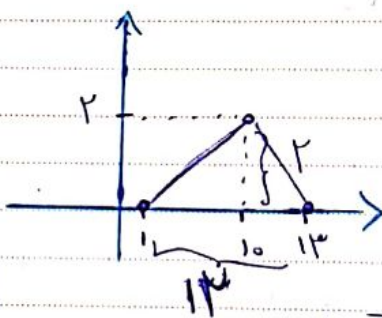
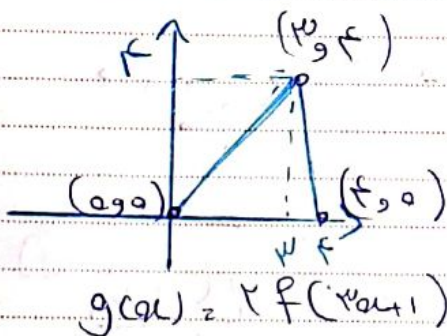
$$f(x) = x - 2 + \sqrt{x-2}$$

①

$$x = y \quad \text{قرینه نسبت به } y = x \quad f^{-1}(x) = \frac{x + \sqrt{x^2 - 4}}{2}$$

نقاط برخورد $y = x$ و $f(x)$ همان $y = x$ و $f^{-1}(x)$ است

$$f(x) = x \quad x - 2 + \sqrt{x-2} = x \quad \sqrt{x-2} = 2 \quad x = 6 \rightarrow \boxed{y = 6}$$



②

$$2f(0+1) = 0 \quad f(1) = 0$$

$$S = \frac{2 \times 12}{2} = 12$$

$$2f(1) = 2 \quad f(1) = 2$$

$$2f(13) = 0 \quad f(13) = 0$$

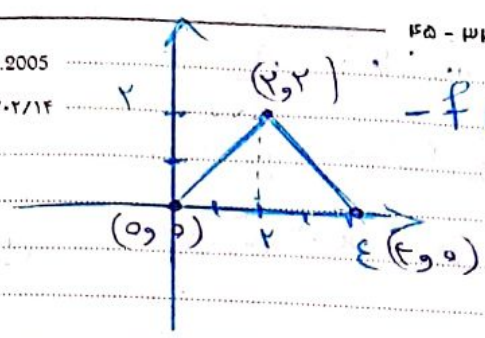
$$A(1, -1) \rightarrow f(1) = -1 \quad A'(x_{A'}, y_{A'}) \rightarrow a + 2f\left(\frac{x-a}{2}\right) \quad \text{③}$$

$$\frac{x-a}{2} = 1 \quad x-a = 2 \quad y_{A'} = a + 2f(1) = a - 2$$

$$x_{A'} = a + 2 \quad A'(a+2, a-2)$$

$$y = 2x - 1 \rightarrow a - 2 = 2(a+2) - 1 \rightarrow \boxed{a = -5}$$

04.05.2005
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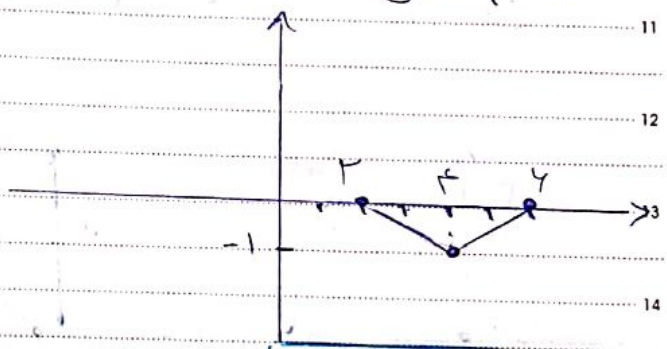


$-f(x-2) \rightarrow y_2 = \frac{1}{2}f(4-x)$

$-f(0-2) = 0 \quad f(-2) = 0 \rightarrow 4-x = -2 \quad x = 6 \quad y_2 = \frac{0}{2} = 0$
 $-f(2-2) = 2 \quad f(0) = -2 \rightarrow 4-x = 0 \quad x = 4 \quad y_2 = \frac{-2}{2} = -1$
 $-f(4-2) = 0 \quad f(2) = 0 \rightarrow 4-x = 2 \quad x = 2 \quad y_2 = \frac{0}{2} = 0$

$(4,0), (2,-1), (0,0)$

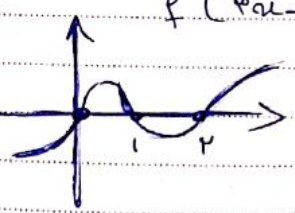
$\frac{1}{2}f(4-x)$



$f(-1) = 0 \rightarrow 4x-1 = -1 \quad x = 0$
 $f(2) = 0 \rightarrow 4x-1 = 2 \quad x = 3/4$
 $f(4) = 0 \rightarrow 4x-1 = 4 \quad x = 5/4$

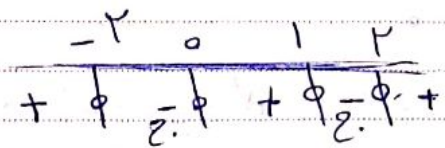
$g(x) = \sqrt{-(x+1)f(4x-1)}$

$(0,0)$
 $(3/4,0)$
 $(5/4,0)$



$Dg: \begin{cases} -(x+1) \cdot f(4x-1) \geq 0 \\ (x+1) \cdot f(4x-1) \leq 0 \end{cases}$

$\begin{cases} x = -1 \\ x \geq 0 \\ x = 1 \\ x = 2 \end{cases}$



$Dg = [-1, 0] \cup [3/4, 5/4]$

$f \circ g = f(g(x))$

$g = \{(2,2), (3,2), (5,2)\}$

$f = \{(2,2), (3,2), (5,2)\}$

$x \in Dg \rightarrow x \in \{2, 3, 5\}$

$g(x) \in Df$

$g(x) \in \{2, 3, 5\}$

$f \circ g = \{(2,2), (3,2)\}$

$g(x) = 2 \Rightarrow g \in Df \rightarrow x = 2$
 $g(x) = 3 \Rightarrow x = 3$

$f(g(2)) = f(2) = 2$

$f(g(3)) = f(3) = 2$

$$f: \{(1,5), (2,1), (3,4)\}$$

$$g: \{(1,2), (2,4), (3,1)\} \quad \textcircled{V}$$

05.05.2005

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$$g \circ f(x) = g(f(x))$$

$$x \in D_f = \{1, 2, 3\}$$

$$f(x) \in D_g = \{1, 2, 4\} \rightarrow x \in \{1, 2, 3\}$$

$$g \circ f = \{(1, 2), (2, 4)\}$$

$$f \circ g(x) = f(g(x))$$

$$x \in D_g = \{1, 2, 4\}$$

$$g(x) \in D_f = \{1, 2, 3\} \rightarrow x \in \{1, 2, 4\}$$

$$f \circ g(x) = \{(1, 5), (2, 1), (4, 1)\}$$

$$g \circ f(x) - f \circ g(x) = \{(2, 4)\}$$

$$f(x) = \begin{cases} 1-x & x \geq 0 \\ 1+x & x \leq 0 \end{cases}$$

$$f \circ f(-\sin^2 x) = ?$$

①

$$f(-\sin^2 x) = 1 + (-\sin^2 x) = \cos^2 x$$

06.05.2005

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$$f \circ f(-\sin^2 x) = f(f(-\sin^2 x)) = f(\cos^2 x) = 1 - \cos^2 x = \sin^2 x$$

$$f(x) + f(2) = 2x + 2 \quad f \circ f(0) = ?$$

④

$$x = 2 \rightarrow 2f(2) = 4 + 2 \rightarrow f(2) = 2$$

$$f(0) = 2x_0 - 2 = -2$$

$$f \circ f(0) = f(f(0)) = f(-2) = -4 - 2 = -6$$

07.05.2005
۱۳۸۴/۰۲/۱۷

۱۴۰۰ - ۱۳۹۹

ایمان

7 May, Saturday

۲۸ ربيع الاول ۱۴۲۶

۱۷

شنبه

ایمان

$$f(x) = 2x - 1$$

$$g(x) = x^2 - 3x + 1$$

$$\alpha^2 + \beta^2 = ?$$

$$f \circ g(x) = g \circ f(x)$$

(۱)

$$f \circ g(x) = f(g(x)) = f(x^2 - 3x + 1) = 2(x^2 - 3x + 1) - 1 = 2x^2 - 6x + 1$$

$$\rightarrow f \circ g(x) = 2x^2 - 6x + 1$$

$$g \circ f(x) = g(f(x)) = g(2x - 1) = (2x - 1)^2 - 3(2x - 1) + 1 =$$

$$4x^2 - 4x + 1 - 6x + 3 + 1 = 4x^2 - 10x + 5$$

$$\rightarrow g \circ f(x) = 4x^2 - 10x + 5$$

$$f \circ g(x) = g \circ f(x) \rightarrow 2x^2 - 6x + 1 = 4x^2 - 10x + 5$$

$$2x^2 - 6x + 1 = 4x^2 - 10x + 5 \quad \alpha^2 + \beta^2 = S^2 - 2P = (1^2) - 2\left(\frac{10}{2}\right) =$$

$$S = \frac{-b}{a} = \frac{10}{2} = 5$$

$$100 - 100 = 0$$

$$P = \frac{c}{a} = \frac{1}{2}$$